Contents, October, 1918

Vol. XXII MOTOR BOATING No. 3

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Great Lakes Boat Building Corporation's Facilities Entirely Devoted to War Work

FOR the duration of the War it will be impossible for us to build any more Great Lakes Standardized Express Cruisers, as the entire capacity of our plant and organization is devoted to War Work—and will continue to be just so long as the Government has work for us to do. In between the time we finished the 110 Footers last year for the Navy Department and the starting of our contract for Airplane Propellers we built a number of our Fifty and Fifty-Two Foot Standardized Express Cruisers.

A limited supply of both of these sizes are now on hand, completely equipped and ready for immediate delivery. When the boats on hand are sold it will be impossible to obtain others until after the War is Won.

Write or Wire for additional data and illustrated booklets

Great Lakes Boat Building Corporation
MILWAUKEE, WIS.

Designers and Builders of Boats of Distinction and Quality

Miss Detroit II at the Gold Cup races at Detroit hitting one of the high spots

MoToR BoatinG to Remain MoToR BoatinG

To be a Magazine Devoted Only to the Interests of Boating and the Motor Boat Industry

WITH the receipt of this number of MoToR BoatinG, the hearts of thousands of motor boatmen will be gladdened. After learning further of the plans we have worked out for them they will be doubly joyous.

When we announced in the last issue of MoToR BoatinG that our magazine would be merged into another with a more or less non-boating name, even though we promised to retain the same boating interests in the re-constructed publication, yet our announcement was received with such a storm of protest from all parts of the country where waters flow and boats and engines are built that we never before realized what an important part MoToR BoatinG played in the daily lives of the motor boatmen of the country. Letters of regret came in by the score and while the general tone running through all of these was that all of our friends of many years' standing would remain with us in the new field, yet there was disappointment that the magazine which they had grown to appreciate more than all others was to embark upon foreign waters with which they were unfamiliar and in which they were only partly interested. All fears may now be forgotten.

Just about the same time we received a request from the Government asking us to slightly curtail our use of paper during the next twelve issues as a war conservation measure. Naturally from a patriotic standpoint, such a request could not be overlooked and as our plans for the new publication called for an increase of about 900 per cent. in our paper consumption for next year, we had no alternative but to abandon our plans which we have cheerfully done.

We know our decision to continue MoToR BoatinG along the lines with which you are familiar will be approved by all of our readers and subscribers. To make MoToR BoatinG the best magazine in the field will be our one task in life. A magazine which will treat the sport and industry from every angle, pleasure and commercial, the large boat and the small boat, power plants of every description, cruises, practical articles written by practical motor boatmen, marine accessories, and the important part which the motor boat and the yachtsmen are rendering in the war, are but a few of the interesting phases which will be given attention in each issue of MoToR BoatinG.

But most important of all, MoToR BoatinG will be strictly a boating paper from now on. It will contain articles and matter pertaining only to boats, engines and the water and things of interest to boatmen. No ex-

(Continued on page 41)

Detroit III Wins the Gold Cup

An Interesting Series of Races on the Detroit River for the American Power Boat Association's Trophy

By Charles F. Chapman

Photographs by M. Rosenfeld

THE Gold Cup, emblematic of the motor boat speed championship of the United States, remains in Detroit for another year. As usual, luck and consistency were as important factors in keeping the cup in the west as the extreme speed of the winning boat. Dame Fortune favored the winner and scowled upon other craft when victory was within their reach.

No records were broken or new ones set up in this year's events other than in the one-mile trials, when a new figure for the high-water mark of motor boat speed was established.

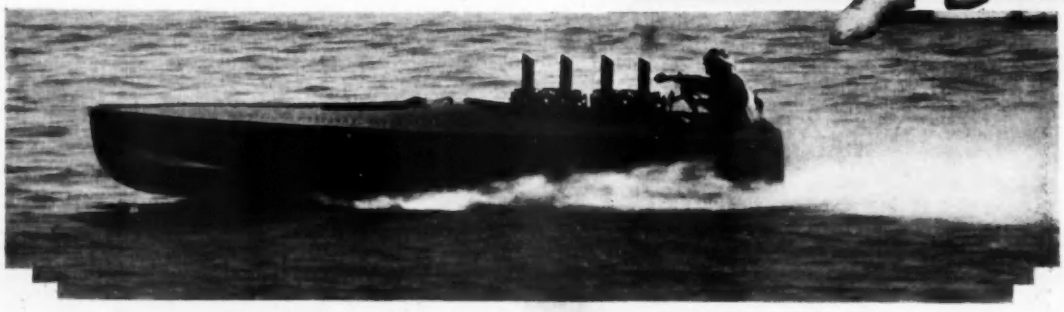
Several points of particular interest and importance developed in connection with this year's races. One of these is that no longer can a stock marine motor be relied upon to furnish enough power to come up to the severe requirements of motor boat racing today. Of the four boats in the Gold Cup races, two had stock motors and the other two had specially built power plants developing more power and having features not found on any stock motor manufactured today. The two specially built engines stood the test, the other two came through in none too good shape. Quite obviously the racing game of today does not attract the builders of American marine motors. The game is too strenuous, too expensive, and too uncertain to appeal to them at present when more serious matters are requiring their attention. No better results may be expected until after the war, but then developments will be beyond our fondest dreams. Until that time, we must be content with what we already have, as it seems very doubtful whether any racing man will be found who is willing to play with the odds so strongly against him and the stakes so great.

There were other features which developed at Detroit which showed that the racing game is all wrong as it is played today.

Although to the outsider it appeared that there were four boats racing, each representing a separate and distinct interest, yet in reality there were only two parties to the contest. One of these a sportsman through and through, and the other a professional builder of hulls and racer of racing machines. It was twenty-five per cent the former and seventy-five per cent the latter.

The former was in it for sport along with the motto, "May the best man win," but the latter had other motives at stake and with sport a secondary consideration. True it is that the drivers of all the boats were amateurs, both according to the spirit and letter of the rules, but a majority of the owners of the seventy-five per cent class, all as good sportsmen as ever breathed, sat on the bank and saw their pets run around the course and had little or nothing to say in regard to the policy of running their boats. The mechanics of the 75s all came of the same family, thought as one mind, spoke as one, and what they spoke generally went, irrespective of the opinions of others. If their thoughts were different from those of the authorities who were put there to run the races, they told the committee what they thought and refused to race until the rulings of the Moguls were more attractive. To complicate matters, the drivers of the 75s were also all of the same family and so nearly of one mind that a civil war was never threatened. It was simply a case of "Who's running this race? and if you

The two "young men" of the racing game. Commodore Kotcher of Detroit and Miami, and Commodore Judson of Lake George and New York City



Miss Minneapolis, a 20-footer powered with an eight-cylinder Sterling motor

Some of the officials, Messrs. Mowry of Minneapolis, Clements of Detroit, Sampson of New York, Still of Detroit, Schefcik of Minneapolis, Chapman of New York, Power of Cleveland and Scripps of Detroit

Aeolus, winner of the express cruiser race for a trophy offered by the Detroit News

don't believe it, we'll see." Of course, the other twenty-five per cent owner was given a chance to express his opinion, but then against such odds, what was the use? He simply said, "I'm agreeable," and let it go at that.

It is true that the races this year were held under peculiar difficulties that may never be encountered again, but until we get away from allowing the mechanics of the competing boats to dictate what shall be and what shall not be done, we never can expect to broaden the Gold Cup races into the event of importance which it should be. It will always be like a ball game in the back lot, with no umpire and both sides continually squabbling, trying to decide which is in the right.

Miss Detroit III, the boat which won the Gold Cup, won it not so much on account of the fast time and speed which she was able to make—her race speed was considerably slower than that made by the winner at Minneapolis a year ago—but because break-downs, some of which were inexcusable, put the other boats out of the competition. However, it is quite probable that this winner, Miss Detroit III, was the fastest boat of the four, taking part—that is, on spurts and short sprints, but when the competition was keen for anything like thirty miles it found Miss Detroit III in the rear. At times it was apparent that she was a seventy-mile boat, for when her 400 h.p. twelve-cylinder Curtiss aviation motor was opened up to the limit the hull fairly jumped over the surface of the water and had no difficulty in passing everything in sight. But her crew had great difficulties in keeping this motor open to the limit for any appreciable length of time, not so much because the motor was faulty, but simply on account of the fact that the driver and mechanician could not stand the punishment which a 70-mile speed in a 20-foot hull gave them every time they attempted to show what the boat was capable of. Even in the official mile trials, which consist of six one-mile dashes, with a breathing space between each dash, one and one-half dashes were enough for the crew of Miss Detroit III, who then gave up, stopped short, and were

The happy crew of Whip-po'Will, Jr. Johnson, Chief Petty Officer Reis and Kneshaw

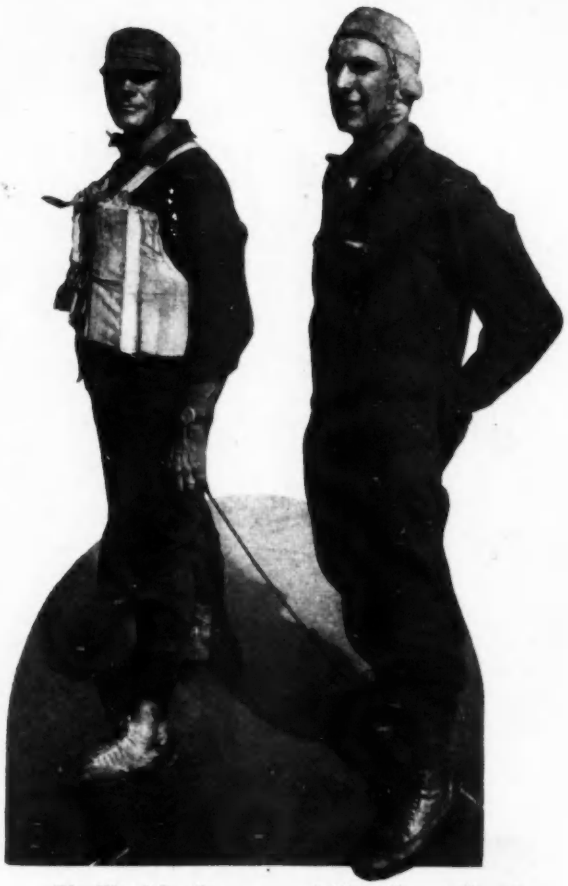
towed home, two sore and distressed motor boatmen.

For a motor boat speed race, it is never possible to get absolutely quiet water, which is one of the chief requisites for extreme speed, especially in a 20-footer. Even if the wind does not blow, the wash set up by the many sightseeing boats and patrol craft, principally the latter, cause a broken sea at all times, which is very distressing to the crews of the competing racing boats. Miss Detroit III, which is the lightest craft for her power ever built, had the habit of striking one of the seas at a 70-mile clip, and the impact was so great that her speed would literally be reduced momentarily fifty per cent. From a 70-mile speed instantaneously down to one of 35, which is equivalent to hitting a stone wall when driving at 35 miles an hour, is not the pleasantest sensation in the world, especially as a continuous performance. Is it a wonder, then, that the Smith-Wood aggregation kicked strenuously when there was the slightest ripple on the water, and at times even refused to race until the conditions for human comfort were more favorable?

The races this year firmly convinced those who were present that the days of the 20-foot hydroplane are numbered. Without doubt the upper limit of their speed possibilities has been reached, with the single exception of for short spurts on water having an absolutely glassy surface.

When one can pick his weather and place for running at 70 miles an hour, the problem is not so difficult to solve, but in order to be able to race according to a pre-arranged schedule, any time and anywhere, the 20-footer will no longer do. With powers up to 250 h.p. they make the most successful speed boats which it is possible to produce for average inland racing conditions. But for speeds about the mile-a-minute mark, and excessive size power plants, the 20-footer is obsolete.

Another point which the racing men must give attention to in the future is to provide more protection for the crews of the boats. As it is now, it's a good deal of a gamble as to whether they will come through a 30-mile race without physical injury. With a continuous bombardment of water and spray upon the faces of drivers, hitting them at a speed not so much slower than a broadside from a machine gun, their vision ahead is limited to a very few feet.



The Wood Brothers, crew of Miss Minneapolis and brothers of Gar Wood, driver of Miss Detroit III and also brothers of the driver of Miss Detroit II

Bow view of Miss Detroit III. The only way to get a good view of the bow of this boat was when she was hauled out of the water. All the contestants had was a good stern view

Add all this discomfort from the outside elements to sitting directly astern of eight or twelve red-hot cylinders, belching fire, fumes and smoke in your face at the rate of perhaps 15,000 explosions a minute, and you have a good picture of what the drivers must endure and put up with to get possession of a trophy of little actual value. Buoys and turning marks cannot be seen, and it's only luck which has prevented some very serious accidents.

Of the boats which raced at Detroit this year, three

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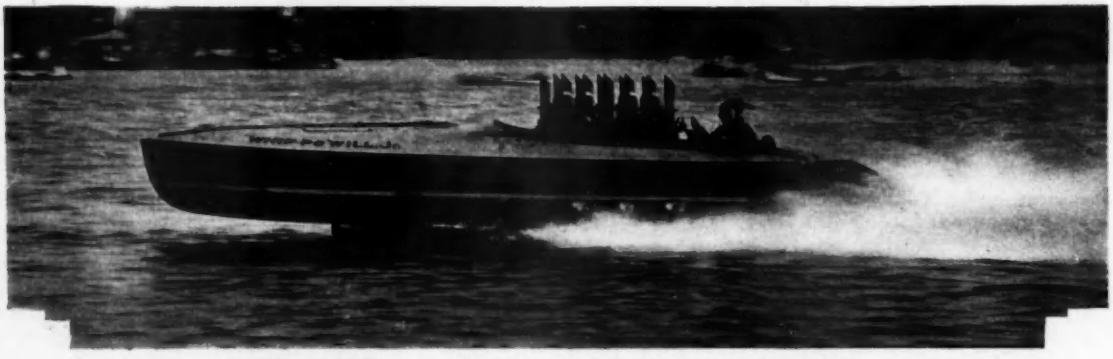
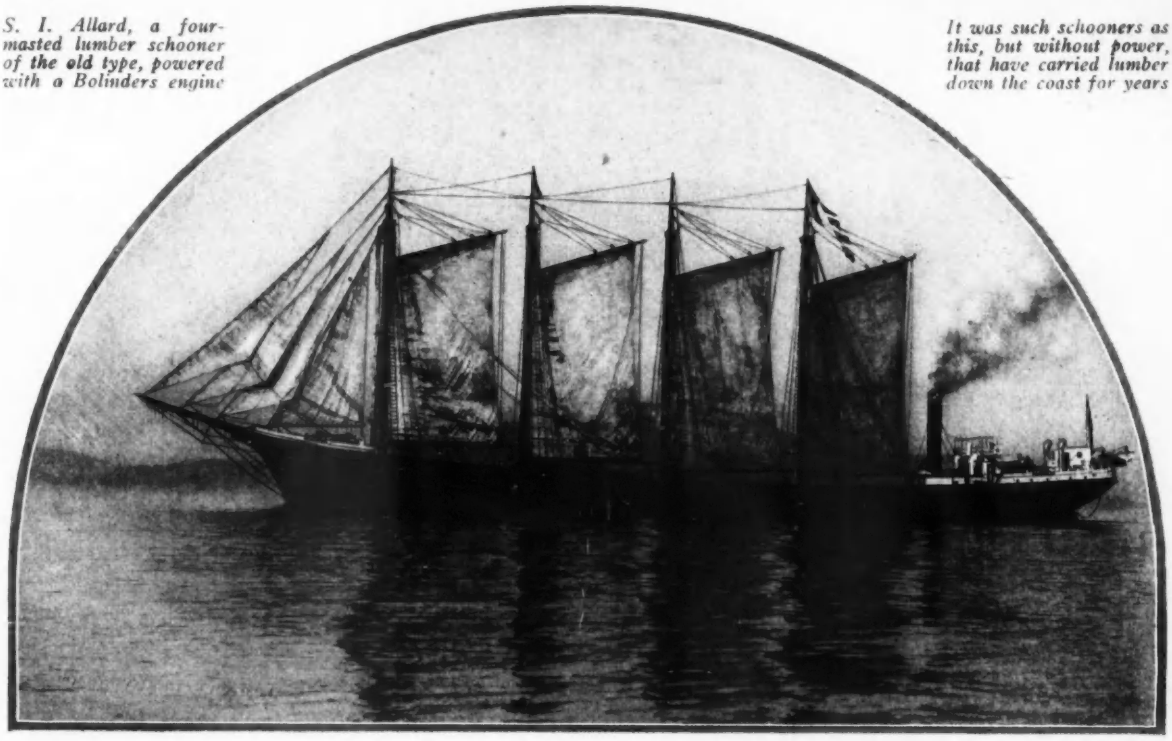


Whip-po'Will, Jr., as she appeared when going at 65 miles an hour

S. I. Allard, a four-masted lumber schooner of the old type, powered with a Bolinders engine

It was such schooners as this, but without power, that have carried lumber down the coast for years



Deep Sea Motor Ships

The Heavy-Oil Motors Replacing Sail and Steam-Driven Vessels

PART V—THE LUMBER CARRIERS

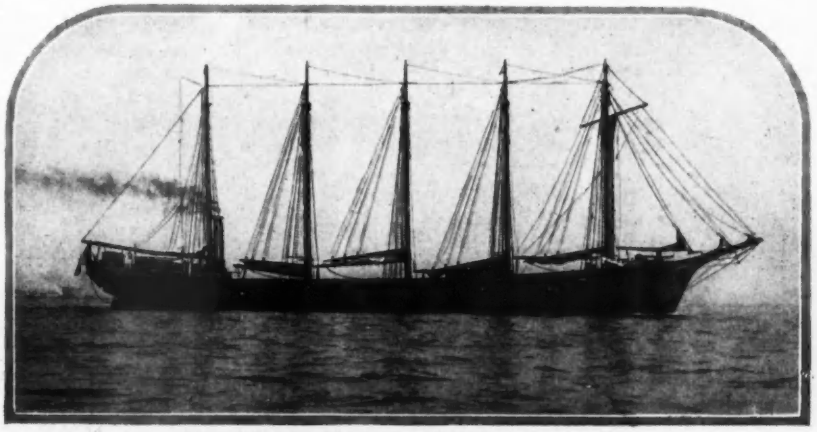
By A. V. Comings

AND now we come, in this story of the development of motor-driven commercial craft on the Pacific coast, to the era of the motor ship, the logical outcome of all the years of previous development along smaller lines. The entire success of the Diesel and so-called Semi-Diesel motored boats led economically inclined shipping men toward a thorough investigation of the heavy-oil power for the largest types of ships.

Previous to the opening of the world war, two or three Diesel-engined motor ships had visited the Pacific coast, coming from Europe and showing the Pacific coast shipping interests that this type of ship could be depended on quite as surely as the older steam-propelled craft. Interest was developing rapidly when the war broke out, and then, with the sudden and tremendous demand for tonnage, tonnage of any kind just so it was tonnage, the Pacific coast awakened one morning to find a score of shipyards from Vancouver to San Diego, working feverishly on all manner of heavy-oil engined ships, and today ships from these yards are ploughing the Seven Seas, propelled by Diesel and Semi-Diesel engines, and the fleet that seemed but a far off vision a few years ago is now a wonderful reality.

Shipyards that were overgrown with underbrush from long disuse, shipyards that had just managed to eke out an existence through long, lean years, sprang into quick life at the call for ocean-going tonnage, and tide flats and vacant water front property all along the coast blossomed with big new ship building yards almost over night.

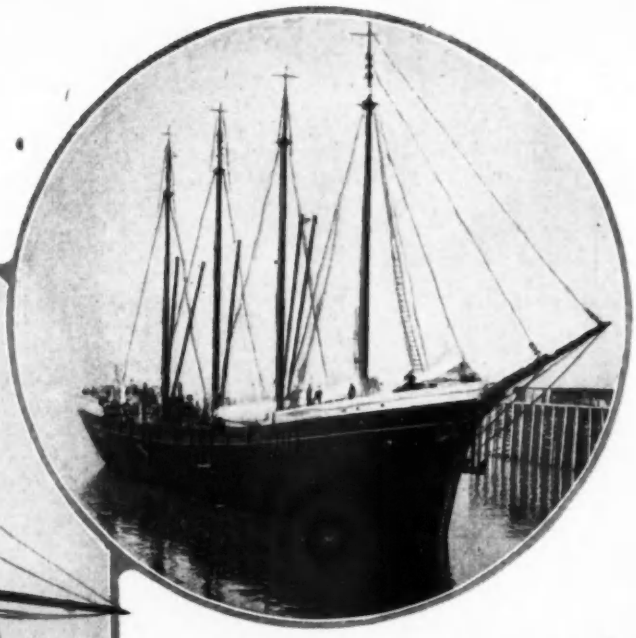
Steam outfits were hard to get, the doubtful coal situation loomed more doubtful as days went on, and with heavy oil pentiful along the entire coast, shipping men turned to the heavy-oil engines as the logical power, manufacturers of this type of motor all over the United States and in neutral Europe were deluged with orders, and from beg-



City of Portland is another Bolinders-powered lumber schooner that has made good from the start

ging for orders in this country, the manufacturers became the ones who were begged, begged for deliveries.

And now as to the types of ships into which the heavy-oil motors have been installed. These have been, for the most part, schooner-rigged craft using the motors as auxiliaries,



The auxiliary schooner Astoria completed last year is a typical lumber carrier of the Pacific Coast

yet there have been many of other types built, also.

The schooner S. I. Allard, built by the McCormick Ship Building Co., of St. Helens, Oregon, is one of the early and typical lumber schooners built on the Pacific coast that has made good from the day it was launched. She is a typical lumber schooner of the old windjammer days, save that away aft she shows a bridge deck, a funnel, and houses foreign to the old timers. Her four baldheaded masts are rigged as in the olden days.

A million and a half feet of lumber stows comfortably in her holds, and a round trip of 15,000 miles, Pacific coast to Australia and return, is nothing but pleasure to her. She has done this, more than once, and her holds are filled with copra from the South Sea islands on the return trip. No bunkering of coal for Allard, just a few tanks of oil below decks, and her Bolinders heavy-oil engines go plugging away day after day just the same as steam.

City of Portland is another of these early lumber schooners, and she carries 2,000,000 feet

Vashon Island is a Diesel-powered ferry boat making regular trips out of Seattle

A product of standardized design. Mt. Rainier is one of nine five-masted auxiliary schooners recent'y completed

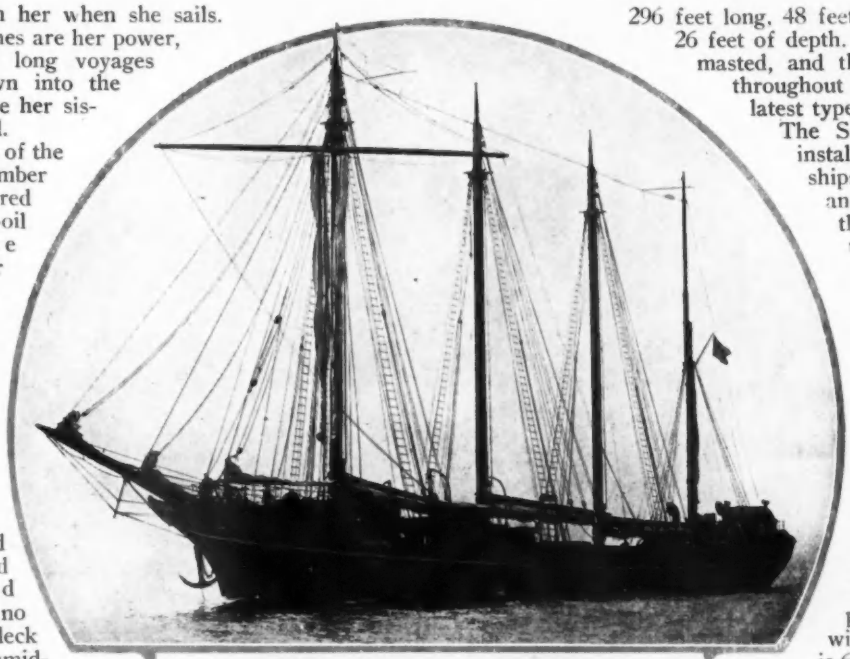
of lumber with her when she sails. Bolinders engines are her power, also, and her long voyages carry her down into the South Seas like her sister ship, Allard.

Sierra is one of the first of the lumber ships powered with heavy-oil engines. She was built for the E. K. Wood Lumber Co., and is powered with two 320 h. p. Bolindersengines. Her motors, unlike the motors on Allard and City of Portland are placed amidship, and she carries no sails. Her deck houses are all amidship, and her two heavy masts are only used as support for cargo booms.

Sierra has made some wonderful records, among her recent trips being a voyage to Valparaiso, Chili, with a million and a quarter feet of lumber and a return voyage with nitrates, all with only one filling of her fuel tanks, and that in San Francisco. Any shipping man who knows what it is to stop several times on a trip like that for bunker coal, when steam is the power, will realize what the coming of oil for power means.

One thing that the building of motor ships has brought to the Pacific coast is standardization of types, for many ship yards are now working on, or have completed, orders calling for from a few to a dozen or more motor ships of the same dimensions.

Of this type is Mt. Rainier, one of nine vessels of the same type all equipped with twin Sumner oil engines of 350 h.p. each. These vessels are all topsail schooners of 4,000 tons burden, and are 296 feet long, 48 feet of beam, and 26 feet of depth. They are five masted, and their equipment throughout is of the very latest type.



The auxiliary schooner Nuuanu makes regular trips between San Francisco and the Philippine Islands. Robert Bridges is a Diesel-powered passenger ferry in daily service at Seattle

The Sumner engines installed in these ships were designed and built in Seattle, and are of the four-cylinder, two-cycle, open column with cross head type. They show an indicated h.p. of 500 at 210 r.p.m. and on slow speed the engines may be turned as low as 100 r.p.m. Their weight is 25 tons. The propeller used with these engines is 6 feet 6 inches in diameter with 5 foot pitch.

Like practically all of the motor craft on the Pacific coast, Mt. Rainier is equipped with electrical apparatus of the most improved type. A 6 k.w. generator is driven by an auxiliary engine, running at 450 r.p.m., while a 15 h.p. motor drives the bilge pumps and air compressors. A gas engine is used for hoisting sail.

Mt. Rainier carries as crew a captain, three mates, eight seamen, and three oilers, together with the requisite number of petty officers.

Another of the big Sumner power motor schooners sent out from Pacific coast ship yards is Santino, which has the same engine equipment as Mt. Rainier, and which registers 4,000 tons. This vessel, on its first trip, sailed from San Francisco to Boston via the Panama Canal, with an average speed of 5.8 nautical miles per hour and an average daily fuel consumption of 15.22 barrels of

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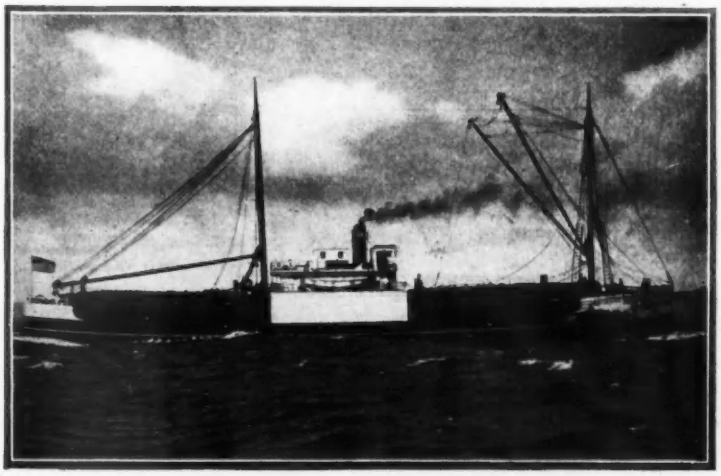


Sierra was one of the first full-powered lumber ships with heavy-oil engines

The crowd at the score board. The races had been over for some time when this photograph was taken

Whip-po'Will Jr. Cleans Up at Toronto

Eastern Craft Wins Both the Three Days Series Races and the Special Gold Trophy in Canada

LAST Fall the Toronto Motor Boat Club joined the American Power Boat Association. At the annual meeting of the Association they offered a Trophy to the A. P. B. A. to be known as the Canadian International Gold Challenge Trophy and to be raced for annually in September at Toronto. The Association accepted the trophy and the races were scheduled for September 4, 5, and 6, so that they would not conflict with the Gold Cup races at Detroit.

The first races for the Canadian trophy were a decided success notwithstanding the scarcity of racing boats this year on account of it being practically impossible to get new hulls built or obtain the necessary and proper power plants. No boats were available except those which competed at Detroit. However, three of those were hurriedly loaded on express cars just as soon as the Gold Cup races were over and arrived in Toronto bright and early on the morning of September 4. Miss Detroit III and Whip-po'Will Jr. were shipped exactly as they raced on the Detroit river but as only enough good parts of Miss Detroit II and Miss Minneapolis remained after the finish of the last heat of the Gold Cup races to make one good racing machine, it was decided to combine the good parts of each boat and take the resulting combination to Toronto.

The hull of Miss Detroit always was very fast and was in good condition but her motor was down and out. Of Miss Minneapolis, the motor was the best, so that was transferred to the other hull and the new outfit was bought by Mr. Mowry of Minneapolis and given the name of Miss Minneapolis. The pooling of these parts proved a very wise move as the new Miss Minneapolis proved to be a very fast and consistent performer.

The Toronto course was laid out on Lake Ontario off the Canadian National Exposition Grounds. It was elliptical in shape, five miles around with easy turns at each end marked by five turning buoys. A more ideal course could not be imagined providing the wind did not blow. The course was protected from winds from about eight points but when the wind blew from other directions it was likely to make old Ontario kick up a few white caps. The weather during the races was quite favorable, there being an offshore breeze nearly every day.

The Toronto Motor Boat Club had made elaborate preparations for the races and to take care of the visitors and spectators. Even though their lack of experience may have been the reason for leaving a few things undone until the last minute, yet there were other features which they had provided which could be copied to advantage by other clubs. A large score board erected where thousands of spectators could see it kept them informed as to the names and times of the various boats, lap by lap. Telephone connection was established with the judges' and timers' stand and one man was assigned the duty of giving the results to the blackboard attendant.

Chiefly responsible for the success of the Toronto

COMPLETE SUMMARY OF RACES FOR CANADIAN INTERNATIONAL GOLD CHALLENGE TROPHY—LAKE ONTARIO, TORONTO, CANADA, SEPTEMBER 4, 5, AND 6, 1918. COURSE 30 STATUTE MILES, 6 LAPS OF 5 STATUTE MILES EACH

Boat	*Owner*	*Motor*	*Time 1st Race*	*Speed 1st Race*	*Time 2nd Race*	*Speed 2nd Race*	*Time 3rd Race*	*Speed 3rd Race*	*Total Time*	*Points*
Whip-po'Will, Jr.	A. L. Judson	400 H.P. Van Blerck.....	43:06	41.7	1:09:00	29.2	39:32	45.5	2:21:38	18
Miss Minneapolis	G. A. Mowry	250 H.P. Sterling	D N S	——	34:35	52.0	39:22	45.6	——	13
Miss Detroit III	G. A. Wood, et al.	400 H.P. Curtiss	D N S	——	33:13	54.1	D N S	——	——	7

Miss Minneapolis at Toronto. This boat is not the same Miss Minneapolis which raced at Detroit, but is the hull of Miss Detroit II and engine of old Miss Minneapolis. The crowd called her Minnie Detroit, rather appropriate for this combination

Commodores Bickell and Judson

Races were Commodore Rea and Secretary Allison. Assisting them were Captain Beatty and Commodore Sylvester with Jack Bickell, formerly part owner of the Peter Pans, with the late James Simpson, having general supervision over all the details.

The races were scheduled to take place at 5 P. M. of each day but as that hour approached on the first day, the sky was overcast and rain threatened. Less than one minute before the time for the preparatory gun, Gar Wood appeared at the judges' stand and asked what they were going to do about racing in the rain. At that time there was no rain falling or if there was, it was so light that none of the crowd which blackened the lakeside considered it necessary to make use of an umbrella. After a hasty conference, the judges decided that the race should go on but gave the owner of Miss Detroit III a 15-minute postponement to allow him time to bring his craft to the starting line. This postponement was later extended to half an hour, although the Miss Minneapolis appeared in time to start at 5:15. Wood with his Miss Detroit III failed to return and according to prearranged agreement Miss Minneapolis after the preparatory signal had been given, started up and returned to quarters without crossing the starting line. Previous to returning, the mechanic of this boat expressed his opinion of the officials for calling the race in such doubtful weather.

During all of these proceedings, Whip-po'Will Jr. had been tied in front of the judges' stand; the crew willing and eager to race. The weather and the threatening rain did not frighten them in the slightest and at the starting signal they went over the line with Leopard II and Heldena II, two local displacement racers which had no show to win but were game enough to make a race against the odds.

Naturally, Whip-po'Will Jr. won with ease and was credited with 7 points, enough to win the cup providing she finished in the remaining two races. The childish action of the two Smith boats and cost them a chance to win the series and made them very unpopular with the immense crowd which had come to the exposition grounds to see a real race and not one hydroplane running around by herself.

A strong off-shore breeze greeted the contestants when the race was called for the second race of the series. Consequently the course was in good condition with a slight chop on the outer leg. Both Miss Detroit III and Miss Minneapolis were on hand well ahead of time and all primed up to give Whip-po'Will Jr. the run of her life. However, Whip chose to play safe as her lead in points was enough, so she just loafed around the course trailing Miss Detroit III and Miss Minneapolis which finished in the order given. An average speed of 54.07 miles an hour for the 30 miles was made by Miss Detroit III with her fastest lap of 5 miles at the rate of 59.4 an hour, the best official speed of any boat made in competition in 1918. Miss Minneapolis' speed for

Whip-po'Will, Jr., winner of the Canadian International Gold Challenge Trophy

Start of the race on the last day of the Toronto races, Miss Detroit III leading, Whip-po'Will Jr., second, Miss Minneapolis, third, and Baby Doris fourth, Whip-po'Will Jr., won, Miss Detroit III being disqualified

30 miles was 52.03. Whip-po'Will Jr. broke a valve stem which put her out of the running for over 30 minutes, consequently her running time was 1 hour, 9 minutes for the 30 miles. The points on the trophy now stood at the end of the second heat, Whip, 12; Leopard II, 10; Miss Detroit III, 7; Miss Minneapolis, 6.

Beautiful weather was the schedule for the last day's racing until about an hour before the time for the start. At that time, a slight breeze sprang up from the lake which ruffled the water's surface slightly but even then the white caps were few and far between. The same three boats lined up for the start with No. 3 over first as usual, followed closely by Whip and Miss Minneapolis. The first inshore leg was enough for Miss Detroit III for at the turning buoy, only a mile down the course, this boat decided she had had enough and turned about and made for shore in jig time.

The fight was then between Miss Minneapolis and Whip Jr. with the latter leading all the way around by 2 to 10 seconds. It was a thrilling race for the spectators, but for the crew of Whip it was more of a joyride as they elected to stay quite astern of Miss Minneapolis all the way around. Ten seconds separated the boats at the finish of the 30 miles and the average speeds recorded were 45.6 and 45.5 respectively.

The twelve-cylinder Curtiss motor of Miss Detroit III

Thus Whip-po'Will Jr. wins possession of the Canadian International Gold Challenge Cup and may keep it for one year, when it must be returned to the Toronto Motor Boat Club and raced for next year over the same course. Whip was credited with 18 points, Miss Minneapolis with 13 and Miss Detroit III with 7.

There were several members of the Toronto Committee who were not convinced that the results of the competition for the Canadian International Gold Challenge Trophy conclusively proved that Whip-po'Will Jr. was entitled to the championship. The driver of Miss Detroit III thought if he had another chance he could establish a world's record which would stand for many a day.

The Toronto Motor Boat Club had in its archives another gold trophy which had not been raced for for several years. It was formerly the property of the Great Lakes Power Boat League, but when this organization went out of existence a few years ago the Cup was deeded to the Toronto Motor Boat Club. They decided to offer it for a single race of 25 miles on the day after the on the trophy now stood at the end of the second heat races, the first boat to finish to take the cup.

The race was a dandy. Miss Detroit III and Whip stayed together for the entire distance, the former getting in two seconds in the lead. However, in gaining the advantage she had cut one of the turning buoys, which automatically disqualified her and the cup went to Whip-po'Will Jr.

SMALL MOTOR BOATS

Their Care, Construction, and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions for the December Issue

1. What is the best way to make a damp magneto work and how may it be best protocted from dampness.

Suggested by A. H. W., Fitchburg, Mass.

2. Describe and illustrate what you consider the most desirable feature of your motor boat.

Suggested by L. R. L., Columbus, O.

THE Prize Contest Department is open to every reader of MoToR BoatinG. The primary object of this department, conducted by the readers themselves, is to furnish valuable and practical first hand information from motor boatmen to motor boatmen on any subject pertaining to motor boats, their care, construction, power plants, equipment or any phase relative thereto. Any motor boatman or any person interested is at liberty to contribute replies to the questions printed each month or to suggest questions for subsequent issues. Discussion of the points brought out in the printed answers is invited.

Is Concrete a Suitable Material for the Motor Boat?

Answer to the First Question in the July Issue

"Does it seem reasonable that concrete construction may be used for small motor boats? If so, how would the cost compare with wood construction?"

Concrete Construction Heavier and More Costly

(The Prize-Winning Answer)

CONCERNING the use of concrete in general as a ship or boat building material the present popular enthusiasm is largely due to the urgent necessity of increasing transportation facilities of the country as expeditiously as possible. The concrete ship is purely a war measure, however, and is recognized as such by all qualified authorities. It is true that a few concrete vessels built here and abroad have made successful voyages, but many more ships remain to be built before the many peculiarities of concrete are fully understood. It is generally conceded that the principal application of concrete for marine use is in heavier vessels, such as pontoons, barges, landing stages, and similar floating equipment.

Concrete ships are considerably heavier than their wooden or steel counterparts, and the carrying capacities are correspondingly less. The power required to drive them being also much greater. The costs vary—at present a concrete vessel will cost about seventy or seventy-five per cent as much as a similar steel vessel. The only way in which low cost can be obtained is by quantity production and the repeated use of the molds. If only a single vessel is to be constructed, the material and skilled labor required for the molds can as readily be used in the construction of a wooden vessel at a lesser cost.

Concrete, to be effective, must be carefully prepared and placed. This requires expert supervision and care in order to avoid mistakes of careless workmanship, which might easily cause failure later on. Concrete, when properly prepared of the best materials, is still slightly porous. But this will not affect the water-tightness, since a small amount of seepage will soon close the pores entirely. From the nature of the material concrete has very little tensile strength and cracks are liable to occur in a vessel due to the varying and alternating nature of the stresses to which it is subjected.

These cracks in themselves would not be serious were it not for the fact that a slight friction is bound to occur along the cracks and a more serious disintegration will start at these points. It will be seen that while concrete will provide welcome additions to the present transportation it must be regarded for some time in the nature of a war measure, and to be completely successful many important problems remain to be solved.

To narrow the problem down to small boats increases the difficulty without any compensating advantages. Wood is a light material of sufficient strength in itself to stand up under the stresses to which it is likely to be subjected in small boat practice. It has the added advantage of being easily worked and fashioned to any desired shape. Concrete, however, is rigid and not flexible, and also weighs from five to six times as much as wood for the same unit volume of material. A certain minimum thickness is essential to protect the reinforcing steel from the action of moisture and consequent rust and to provide material enough to cause proper action of the materials as a beam. This minimum thickness is, at the very least, twice as great as corresponding thicknesses of wood. Consequently, the concrete boat will weigh from ten to twelve times as much as the wooden one. The effective portion of the concrete is only that portion from the reinforcing steel to the surface on the compression side of the beam. That on the tension side acts only as a protective material to the steel and increases the weight tremendously. So while it is possible to construct a small boat of reinforced concrete, the same objections to its use for large vessels apply to, even

Rules for the Prize Contest

ANSWERS to the above questions for the December issue addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be (a) in our hands on or before October 20; (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before October 20. The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions below, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 on any article which sells for more than that amount. There are two prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer both.

For answers which we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG, of which the advertised price does not exceed $5, or a credit of $5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us.

greater extent, viz., the greater weight, the added power necessary, the care required in preparing the mold (this one item alone is practically as costly as the entire wooden hull) and the care and supervision necessary in preparing and placing the concrete.

It appears, therefore, that to properly construct a small boat of concrete, with the fine finish required in motor boat practice, would be such a costly undertaking as to leave no choice between the two.

F. W. H.,
New York, N. Y.

A typical example of a small concrete boat. Extremely poor lines, rough finish, requires excessive form work, and is too heavy for ordinary purposes

There Are No Fundamental Objections to the Use of Concrete

WOOD is a basic material for the construction of equipment used for and in connection with the majority of sports. Consider for a moment the use of wood in the following sports: Yachting or sailing, rowing, bowling, angling, baseball, cricket, golf, and archery—in practically every one of these sports there is no satisfactory substitute for wood, and more recently we have found wood the controlling factor in aeroplane construction.

It is so in the case of the small motor boat, when considered from the standpoint of sport or pleasure purposes—there is nothing that would be quite as satisfactory as wood. It has certain qualities such as buoyancy, lightness, resiliency, etc., that cannot be found in steel or other metals and surely would not be found in concrete. However, if we consider the motor boat from the utility standpoint we can take a different view of the matter, and there is this to be said on the subject.

It has recently been demonstrated that it is entirely practicable to construct the hull of an ocean-going ship of reinforced concrete. Concrete barges have also been successfully built and it would seem that from now on much use may be made of reinforced concrete in ship construction.

There is no fundamental objection to the use of reinforced concrete for small motor boats and under certain conditions there would be many advantages. The wooden hull of a single small boat would probably cost less than a similar concrete hull, but the comparison of the cost of a large number of hulls of the same design would undoubtedly favor the concrete construction. Comparatively unskilled labor can be used in handling concrete and the unit cost falls very rapidly with increasing volume of work.

Probably the small boat could be best made by using expanded metal or mesh reinforcement with the concrete applied by a compressed air gun. This would give a homogeneous quality for the thin surface and save considerable on the cost of forms.

It would be quite natural to think of a concrete boat as something heavy, clumsy, and having excellent sinking qualities when upset. The weight would probably exceed the wooden hull, but should not be such as would merit the term "clumsy." To offset this the line of the boat could be worked out to the most ideal shape and the finished concrete should offer less resistance to the water than the average wooden surface. A cellular construction could easily be designed to give sufficient buoyancy to keep afloat even with the hull filled with water. There would be very little if any trouble due to leaks in the concrete construction. Paint would only be required for appearance and to keep out dampness. The concrete hull would be practically indestructible and unaffected by natural conditions. The fire-proof qualities of concrete have contributed a great deal to its popularity and this quality should have considerable weight in the design of the small boat.

By making suitable provision for anchor bolts it should be possible to more rigidly fasten the motor and propeller shaft than in the wooden hull. Concrete is somewhat affected by oil or grease and it would be necessary to provide oil-tight drip pans under the motor, gears and bearings.

Holes stove in the hull should be easy to repair by cleaning the edges of the break and applying fresh concrete. Open seams could be forgotten, but any small cracks that might appear could be easily filled with tar, paint or grout.

It probably would be desirable to use wood for finishing, although if the fire-proof feature is to be made much of, sheet metal, especially aluminum, could be used to good advantage.

A careful study of this construction will show that it has many advantages and attractive features. It should reduce maintenance cost and set a new standard in durability and stability. Some experiments in design, however, will have to be tried before the ideal is approached.

The amateur who intends to build a concrete boat will do well to make a careful study of reinforced concrete, the placing of the reinforcing rods and the character of the aggregate used. It is mostly on the latter that the imperviousness of the concrete depends. However, the experiment should prove interesting and profitable if a reasonable amount of investigation is carried out.

The concrete boat might help us also to see the advantage and importance of standardization, at least as far as the hull is concerned.

L. R. L.,
Columbus, O.

Concrete Boats Now in the Experimental Stage

IN view of the phenomenal success attending the construction of concrete vessels of considerable size; it is little to be wondered at if visions of smaller motor boats "cast in the mold" or with planking plastered on with a trowel should dance through the heads of motor boat enthusiasts who feel that they must have a new boat. The prodigious cost of everything entering into motor boat construction today makes a possible saving look very attractive, however it may be accomplished.

Nowadays it is impossible to say positively that a thing cannot be done. So, where concrete construction for small craft would have its drawbacks and present many difficulties to be surmounted, it may, after all, be accomplished. Of course, concrete is not the whole thing in concrete vessel construction. The complex reinforcement of wire mesh, rods or expanded metal give the craft her form and strength.

A certain minimum thickness of walls must be maintained for safety's sake and lightness must not be sought for in the concrete boat. It is a question whether the elaborate metal frame-work erected and fastened with painstaking accuracy to give the vessel her designed model would not prove more costly than a frame of oak as at present constructed and whether the material cost, plus the labor of pouring, plastering, and finishing the concrete hull would not more than offset the expense of planking a wooden hull. Wooden guards, decks, combings, and interior joiner work are usually fitted even in the larger concrete vessels, and these, of course, would be even more necessary in small cruising craft.

Most concrete ships already built at home or abroad have been of a burdensome model with full lines and parallel sides, sometimes closely approaching the scow form. Whether the finer lines of a pleasure boat could be successfully reproduced in concrete is one of the unanswered questions yet to be determined by experiment. Taking everything into consideration, it does not seem that any money saving would be possible with concrete construction in its present experimental stage. Perhaps after the molds and forms have been prepared a number of one design concrete boats could be built at a saving over wooden craft of similar type. No doubt as time goes on small concrete boats will be built and will be in some measure at least successful. Just now, however, the wooden boat is the cheaper and safer craft to put your money into.

A. O. G., Portland, Me.

Keep the Flame within the Carbureter

Answer to the Second Question in the July Issue

Describe and illustrate how the dangers arising from back firing through the carbureter can be overcome

A Thorough Safeguard at the Point of Danger

(The Prize-Winning Answer)

THE best way to eliminate danger from back firing is to prevent its occurrence as far as possible by adjustments on the engine itself and then make such provision with outside attachments as will take care of the unpreventable back firing which the present low test gasoline makes more frequent than formerly—particularly in starting a cold engine.

Back firing is caused mainly by causes which can be divided into three heads as follows:

1. Timed wrong on spark and (or) valve.
2. Carbureter adjustment faulty.
3. Starting—cold engine and low test gas.

The first two will cause back firing more or less all the time—or at least till engine has become very hot. The last cause will disappear within a few minutes after starting if there are no other contributing reasons. An engine may have one or any combinations of these causes, and each must be corrected before we consider the exterior attachments to take care of the unpreventable back fire.

The correction of timing has been explained so often, it would be useless to repeat it here.

Faulty carbureter adjustment causing back fire is because of too lean a mixture and should be remedied by turning the low speed adjusting screw or other device to admit a greater amount of gas and obtain a richer mixture not ignited by compression.

So having corrected the interior mechanism of motor under headings No. 1 and No. 2, we come to the cold engine back fire and what we can do to safeguard its possible disastrous effects.

Now an engine can backfire as much as it pleases without danger if—and a most forcible if—there is no loose gas outside of its proper place in tank, pipes, etc. As long as this is the case, the back fire has nothing to ignite, but we are safe in saying no boat ever can be without at least a trace of loose gas somewhere at some time which, being heavier than air, settles low and is not detected by odor. This usually proclaims its presence by "letting go" and then the damage is done.

Gas will get in the bilge from

A—Leaky tanks, pipes, etc.

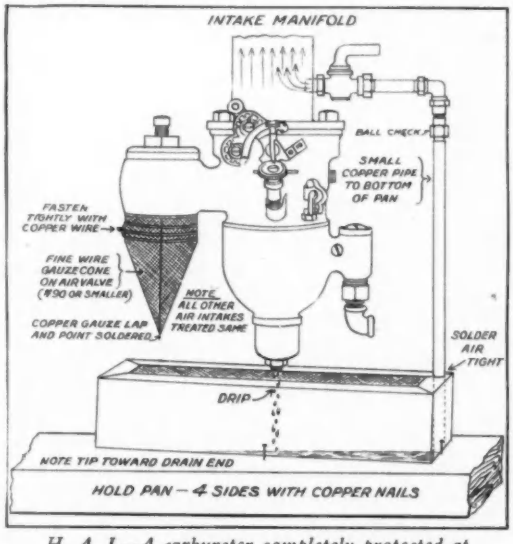
B—Carelessly spilling in priming, etc.

C—Carbureter leakage.

The man who is careless in permitting leaky tanks, connections, etc., or in spilling gas (or cleaning with it) can't be helped in any way except by permanent confinement in an insane asylum. He is on a par with the man who looks down the barrel and pulls the trigger of his gun to see if it is loaded—and it generally is.

Carbureter leakage is another thing. With the present low test gas, it condenses in the manifold when the engine is stopped and runs back through the carbureter onto the floor or bilge. Or a needle valve may stick and flood before it can be remedied.

No matter what the cause of loose gas in the boat, the



H. A. J.—A carbureter completely protected at every point to avoid danger from back-firing

following method will prevent ignition of it by back fire:

Over every air valve, or vent of carbureter, place a cone of No. 90 or finer copper gauze, wired tightly over the opening and with lap and tip soldered air-tight. Be sure and use a good high cone as otherwise the fineness of screen is liable to choke the proper flow of air. One-half-inch under the carbureter place a 6-inch Hand safety drip pan invented by the eminent naval architect, Wm. H. Hand. This is a rectangular pan, the top of which has inwardly inclined upper edges and at the bottom of these edges is a No. 90 wire gauge screen.

Over the top of the pan there is a second wire screen of comparatively fine mesh but coarser than the lower screen. This upper screen is removable to allow cleaning. There is also a drain placed as indicated in sketches where pipe enters.

By experiment it has been learned that gasoline may be poured into this pan through the screens above described and gasoline in the upper screen can be ignited and allowed to burn out, without igniting gasoline or gasoline fumes from fuel in the main or lower compartment.

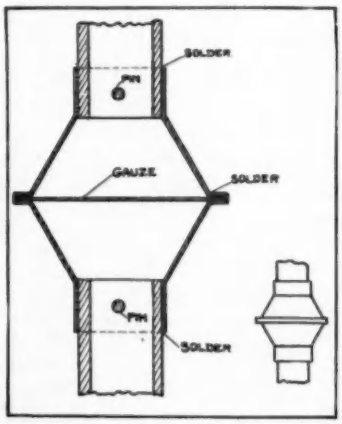
When the upper screen is dry as it usually would be, it is impossible to start any fire either by match or other causes. If the upper screen should be wet with gasoline and it is ignited, only the gasoline present on the screen will burn and this will burn out in a very short time without causing any damage.

In the corner vent hole, insert a copper tube reaching to within the thickness of a piece of paper of the bottom of pan and solder air-tight around vent. Lead up to intake manifold (just above carbureter), which manifold should be drilled and tapped to take a valve and below this should be placed a ball check. The valve should have one end made of pipe threaded and the other arranged for a union which can easily be unscrewed to remove pan for cleaning. Tip pan slightly toward drain and fasten in place with four small chocks or copper nails. Diagrams will show installation which is so simple anyone can easily construct it.

The carbureter should be equipped with a choker or damper to increase the richness of mixture in starting. Those without this can obtain same results by opening the low-speed adjustment and then turning back to normal position after engine is warmed up.

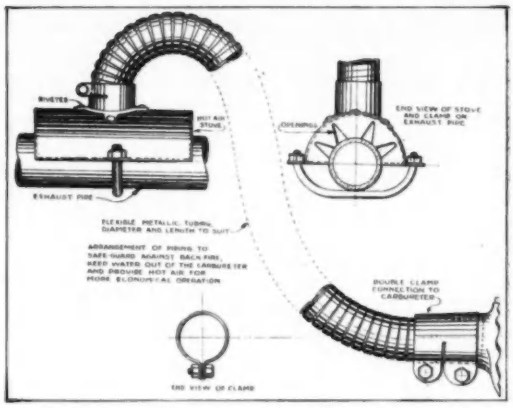
To start the engine make the above adjustments, then open the valve slightly on the pipe leading from the drip pan to intake manifold.

If there is any gas in the pan, the first explosions will suck it out and it will give a still richer mixture to assist in starting. Then close petcock and if after the engine is warmed up an auxiliary air intake is wanted, the petcock can be opened as needed. This will also drain any drip into pan while running. A back fire with this outfit is harmless as your gas is confined in a fireproof pan, and furthermore, the fire cannot pass the gauze cones over all carbureter air vents. The outfit complete, made and attached, will cost less than $10 and is a positive insurance against back fire dangers.



J. F. C.—Wire gauze in the manifold keeps the flame from the carbureter

H. A. J.
New York, N. Y.



G. A. L.—A heater, not only prevents danger from back firing but also gives fuel economy

For Safety and Economy Use a Heater

A WEAK mixture is the usual cause of back-firing at the carbureter, with its attendant danger of fire.

When a cold motor is cranked, back-firing is more pronounced than at other times for the reason that the cold inlet and cylinder walls condense the gasoline, leaving insufficient gasoline in the mixture to burn quickly and the flame of the burning gasoline ignites the incoming charge at the time of opening of the inlet valve.

To overcome this excessive back-firing at the time of starting the motor, the mixture should be slightly over rich and this is done by either opening the needle valve further or by practically closing the air intake with the hand, piece of cloth or wood.

There would be no danger from back-firing if there were no combustible oils, grease or vapors around or near the carbureter. That is to say, nothing that could be ignited, but usually the wood around the engine base is gasoline and oil soaked, making it easily ignited, especially if a few drops of burning gasoline fall on it.

The safest method for protection from a possible fire is to provide a connection to the carbureter intake of flexible metallic pipe or tubing and carry one end up and away from the engine base, preferably to the exhaust pipe to provide heated air for more economical running.

This material can be purchased from most any supply house, costing about 25 cents a foot. One dollar invested in insurance at a very reasonable cost.

Make up a fitting for connecting to the exhaust pipe of sheet iron as shown in the sketch. That will leave the hot air from the upper side of the exhaust piping for the reason of protecting the carbureter from water which on open boats will run down into the tubing and cause trouble in the starting of the engine.

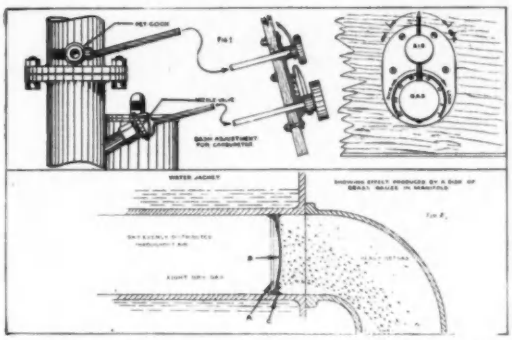
Connect the metallic tubing to the carbureter with a clamp as shown in the sketch, or something similar to avoid an opening through which the flame could shoot.

With an attachment of this kind, there is a considerable saving of gasoline apart from the protection that it provides. However, the engine base should not be neglected and oil allowed to accumulate.

As it is almost impossible to prevent all gasoline dripping from the carbureter it is well to provide some means of catching it so that it will not get into the bilge. This can be done with a brass pan, or better yet, one of those pans made specially for the purpose with wire gauze over the top.

Obvious causes of back-firing, such as broken gaskets, weak valve springs or warped heads and loose manifolds should be remedied to remove as far as is possible every source of surplus air leading to an impoverished mixture.

G. A. L., Washington, D. C.



R. H.—A piece of wire gauze in the manifold will stop the flame and at the same time aid in thoroughly vaporizing the gasoline

The Three-in-One Pipe

THE writer has a 40-foot glass cabin boat, with a four-cylinder Palmer engine installed, and wanted to get away from the three unpleasant things in his outfit. First, the danger of back fire from the carbureter. Second, the unnecessary noise of the air suction on the carbureter. Third, as the engine has a one-inch pipe from the base to let off the foul gas, this was very unpleasant in the engine-room. I went to a tinner and had him make me one piece of two-inch rainspout pipe, galvanized, 6 feet long, with a hood on one end, about five inches in diameter, and covering end of pipe so that there would be no possibility of rain getting in same; then a piece of pipe 18 inches long, having one end reduced to fit tightly over the air intake of the carbureter. In this 18-inch piece of pipe, at an angle of 45 degrees, I had a piece of pipe soldered, the size of one-inch pipe, and connected this to the pipe from the base with about four inches of hose to make it flexible. I put the long pipe against the partition, and extended it through the roof, and connected the lower end with an elbow to the pipe from the carbureter and breather and had a perfect outfit. This does not look at all out of place in the engine-room, and only cost me $4.35 to install, and makes my trips always pleasant and safe.

C. G., Baltimore, Md.

Choke the Air When Starting

THE question as it stood, asked how the dangers incident to back firing or "popping back" could be overcome. Seeing that "An ounce of prevention is worth a pound of cure," the most logical conclusion would be to eliminate back firing first and then remove the incidental dangers.

Back firing is usually caused by too lean a mixture, so in starting it is best to choke the air supply or otherwise enrich the mixture until the motor is warmed up and running good. If the motor or carbureter has no provision for this, it can be arranged as in Figure 1, or the carbureter can be adjusted for easy starting and a gas saver used to thin out the heavy mixture and obtain economy. The drawing needs no further explanation.

However, in case a back fire should occur, the flame can be stopped right in the manifold, but the use of wire mesh (same principle as miner's safety lamp). Such devices are manufactured and sold under the trade name of Gas-K-Hots, and take the place of manifold gaskets.

However, some single cylinder motors have no gaskets, so the owner can make one for himself as in Figure 2. A ring of wire (A) is first soldered in place, then a disk of brass gauze (B) and back of that another ring of wire (C). The three are then soldered to the inside of the manifold and to each other.

These mesh gaskets also make for more economical running, as they break up the globules of gasoline and distribute them through the air, thus enabling the motor to run on a still leaner mixture by giving it a drier gas.

The popping back is now rather effectually prevented, so attention should be turned to the dangers lurking in the boat. Most motor boat fires result from a back fire or wild spark igniting heavy gasoline vapor in the bilge. As this vapor forms from gasoline which drips into the bilge, it is every motor boat owner's duty, not only to himself and family, but to the country as well, to prevent this state, as such gasoline is not only dangerous, but a total loss also.

The gas often drips from leaky unions or connections or from leaky shut off valve. The unions should be tightened up with shellac on the threads and the valves should be ground in with fine valve grinding compound and in some cases a stronger spring put in.

Or perhaps the carbureter is dripping. This condition is due either to a soaked cork float, leaky metal float, stuck float valve, worn float valve, bent float valve lever, or stuck "tickler." The respective remedies for these are: drying and shellacing, emptying and soldering, cleaning, grinding in, straightening and adjusting, and loosening.

Although not directly concerned with the question, it is a good thing to get your ignition wires, coil, etc., out of the bilge and up where everything is in plain sight and crossed wires can be eliminated, and by all means, use good reliable wire or cable. It might save your boat some time, perhaps even your life.

It is also best to buy a Hand drip pan for the carbureter, and a reliable fire extinguisher. The former can be procured at Durkee's.

Summing the whole story up, I would say: Eliminate back firing, prevent wild sparks and above all keep gasoline in the tank where it belongs and not in the bilge.

R. H., Mansfield, O.

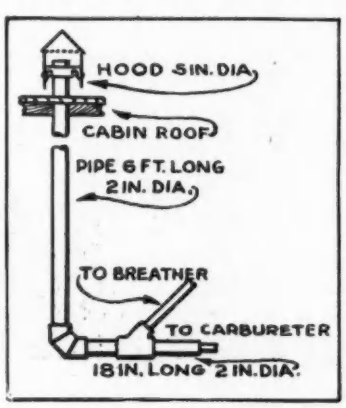
Keep the Flame from the Carbureter

IF a piece of wire gauze is held a short distance above an open gas jet or bunsen burner and a match applied above the gauze it will be found that the gas will burn above the gauze but that the gas below the gauze will not be ignited. This is known as the miner's lamp principle and may be utilized to prevent carbureter back firing as shown in the illustration.

The device consists of an enlarged section in the intake pipe from the carbureter containing a piece of brass gauze. Gauze for this purpose admits of wide variations in size of wire and mesh, but that having .016 inch diameter wire and 3/64 inch holes is about right and is standard.

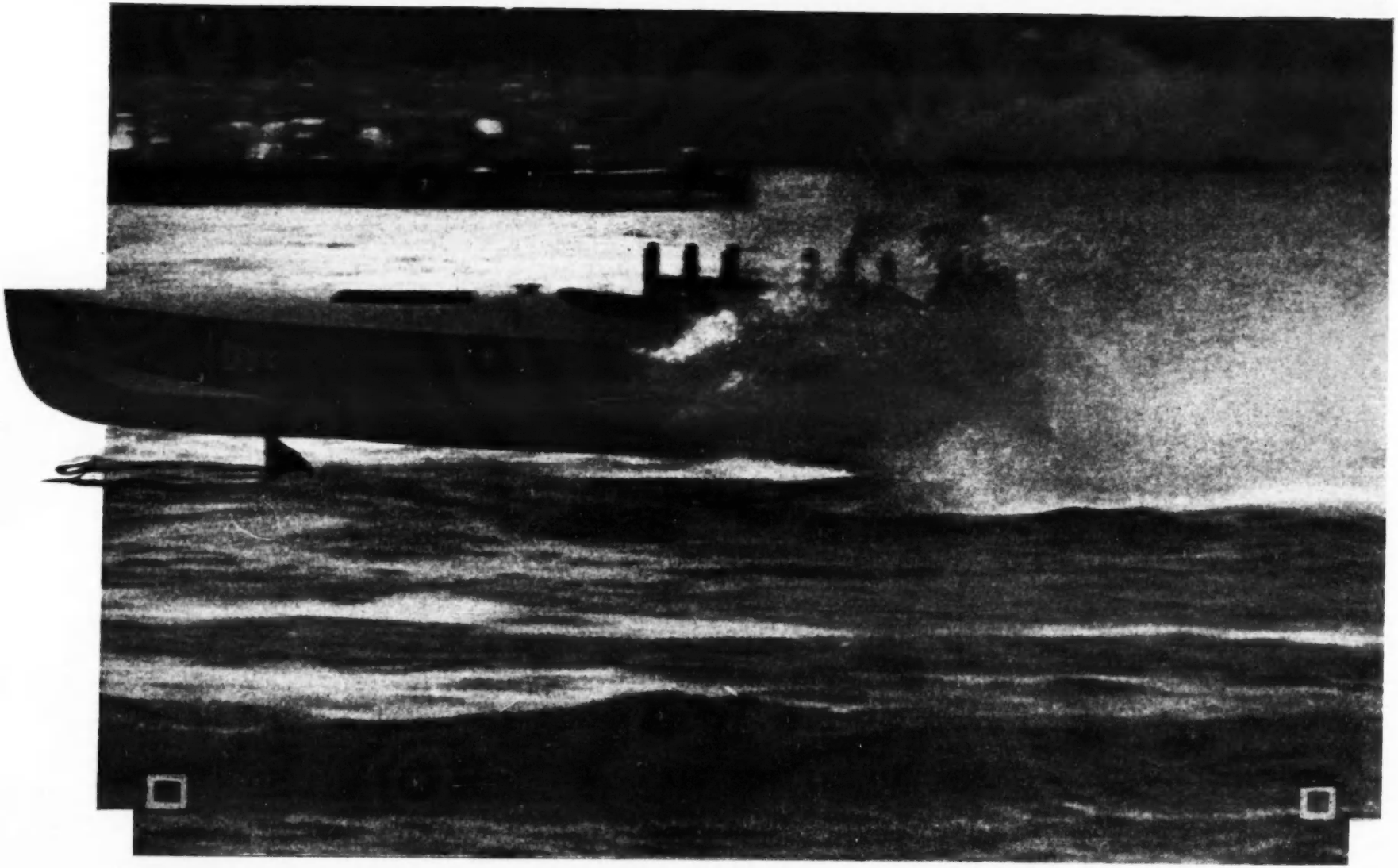
In case this size is used, the diameter of the gauze should be one and one-half times the inside diameter of the intake pipe so as not to impede the flow of gas. As the size of the intake pipe seldom admits of the use of standard pipe connections, probably the most satisfactory way to proceed is to have a galvanized iron section containing the gauze as shown, made up by a tinsmith. A section of the intake pipe is first sawed out, when the new section may be then slipped in place and pinned, care being taken to solder the joints.

J. F. C.,
Meriden, Conn.

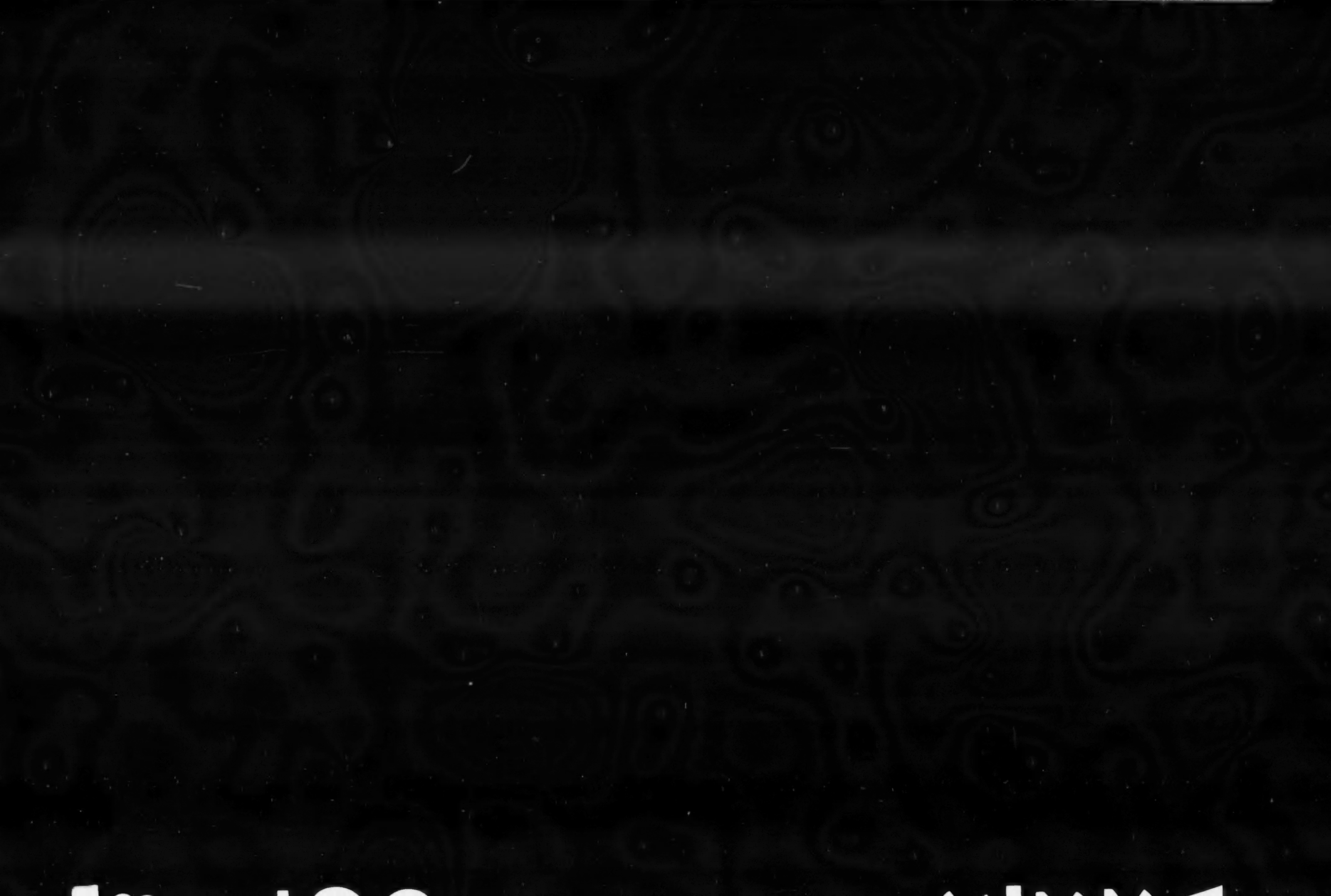


C. G.—The three-in-one-pipe

Miss Detroit III, the 1918 Winner of the American Power Boat Association's Gold Cup



This boat is a 20-footer owned by a syndicate of Detroit yachtsmen. She is powered with a 400 h.p. Curtiss motor and in smooth water is capable of a seventy-mile-an-hour speed



This boat is a 20-footer owned by a syndicate of Detroit yachtsmen. She is powered with a 400 h.p. Curtiss motor and in smooth water is capable of a seventy-mile-an-hour speed

For Flag and Future

By William F. Kirk

SIX Billions of Dollars!

Six billions of little soldiers, mobilizing to smother the last sovereign and crush with their weight the last crimson throne.

Of the people now and with the people forever, they are rolling on to certain victory—Six billion strong!

Compared with this American Army, what were the hordes of Xerxes—the swarms of Attila—the legions of Cæsar? Not all the past with all its pomp and pride and purple could marshal this array. Not all the seers who scanned the skies could see, in all their misty dreams of might, a time and a people of whom history will record what history is to record when we who are here now shall have done our duty and gone our ways.

Six Billions of Dollars! Where is the war chest of the German War Lord now? How may he hope to turn away from him and toward his foes the tide that is rising, rising to engulf him in his sordid, senile years? Again as in Belshazzar's day the Hand has moved along the Wall, and in the twilight of a hectic life a monarch stands at last alone with Truth!

Poor, purblind Prussian Wilhelm! Scant indeed his claim for pity from the human race, and yet, were any found to pity him today, that pity would be based on knowledge of the truly pitiful place he will hold in history. For was it not this mental and physical swineherd who stood, surrounded by his crass courtiers, and said sneeringly: *"What can America do?"*

Throughout this land now doubly dear to all our hearts resounds the tread of marching feet. In every hamlet, every town, every city they are marching—the boys of our hearts, the heroes of our homes! Eyes bright, steps light, souls tempered in the fire of sacrifice, they come at Freedom's confident call—cream of our manhood and dream of our womanhood!

With brusk farewells that hide but clumsily their pain at parting—with cheery smiles that mask but thinly their thought of the grim work ahead and the green graves beyond—with brave eyes that look across the rolling billows as if to see and welcome the charge of a king's driven cattle, they board their ships and go.

They go to mingle with the fighting French, the brave Britons, the stalwart Scots, the fiery sons of Erin—soldiers all who cling today, as they have ever clung, to such ideals as war, the whirlwind, leaves to its disciples. They go to extend the clean hands of Americans to hands that never dripped with babies' blood. They go to look with clear Yankee eyes into eyes that never burned with bestial lust when helpless womankind lay prone before them! They go as men in all the word implies to battle side by side with men until the Army of the Beasts, scattered and shattered, seek their lairs and go to pay their debts to him they mocked!

They go to hardships we may never know at home—to days of strain and nights of pain—to where death crawls across furrowed fields or leaps through gas-polluted skies. They go to twisted trenches drenched with blood and torn by shells, where death is reaching out to throttle life and living men lie staring at the dead. Beneath the cold, white stars they plan the bold, red charge that will, before another night has come, take heavy toll of those now grouped about the crackling campfire. Beneath the silent moon they dream of home and in their dreaming wander with the maids they left behind.

Through dreary days of waiting, through racking days of action, through hours that seem but minutes and through dragging minutes of suspense that seem like hours, these knights of fair Columbia carry on! In the bewildering barrage, when missles fall like meteors and howl like Dante's devils in the dashes Over the Top and into the thick of the foe in moments of stark slaughter and piercing pain they carry on and on and on!

O, you thought all knighthood dead and gone, behold in your mind's eye this greatest tourney of all time! In these red lists a million knights may yield their gallant lives ere tyranny be trampled into the mire from whence it sprung when all the world was groping for the Light of Liberty.

These are our knights—our own Lion Hearted Richards—our own invincible Ivanhoes! Shall history record that in their hour of need, when faltering was farthest from their thoughts, you, safe and secure in the home for which they fight the good fight, failed them and forgot them? God forbid the thought!

What is gold? What is gain? Everything and nothing. Everything when it is the bullion-bulwark between Freedom and Freedom's deadliest foe. Nothing if it is to be spent for shameful ease or handed to a tyrant as tribute! Everything if it be the golden hoop in which is set the sparkling gem of Liberty. Nothing if it be forged into the fetters that bind the vassal to the throne!

Roll on, little soldiers of silver! Lead on, little generals of gold! Devotion today means dollars, not display! Devotion today means sacrifice, not the singing of The Star Spangled Banner! The call of the bugle today is a call to you who are reading these lines. You and your dollars are at the parting of the ways. You and your dollars are saying "Au Revoir" but not "good-bye." They will come back to you bearing trophies of this war in the shape of interest. Would to God our gallant boys could be as sure of greeting you again!

Roll on, little soldiers of silver! Roll into hills of hope and mountains of might! Roll into the avalanche that shall thunder down the passes of Italy, where the descendants of Julius Caesar still bear on high the Eagles of a fighting race! Roll and roll on until the thunder of your gathering weight sends terror to the sordid soul of Wilhelm Herod Hohenzollern, violator of vows and virgins, butcher of babes, tiring tenant of a tottering throne!

Six Billions of Dollars!

Few are the minds that can measure the immensity of this sum. Few were the prophets one short decade ago that would have dreamed of predicting a loan of this magnitude.

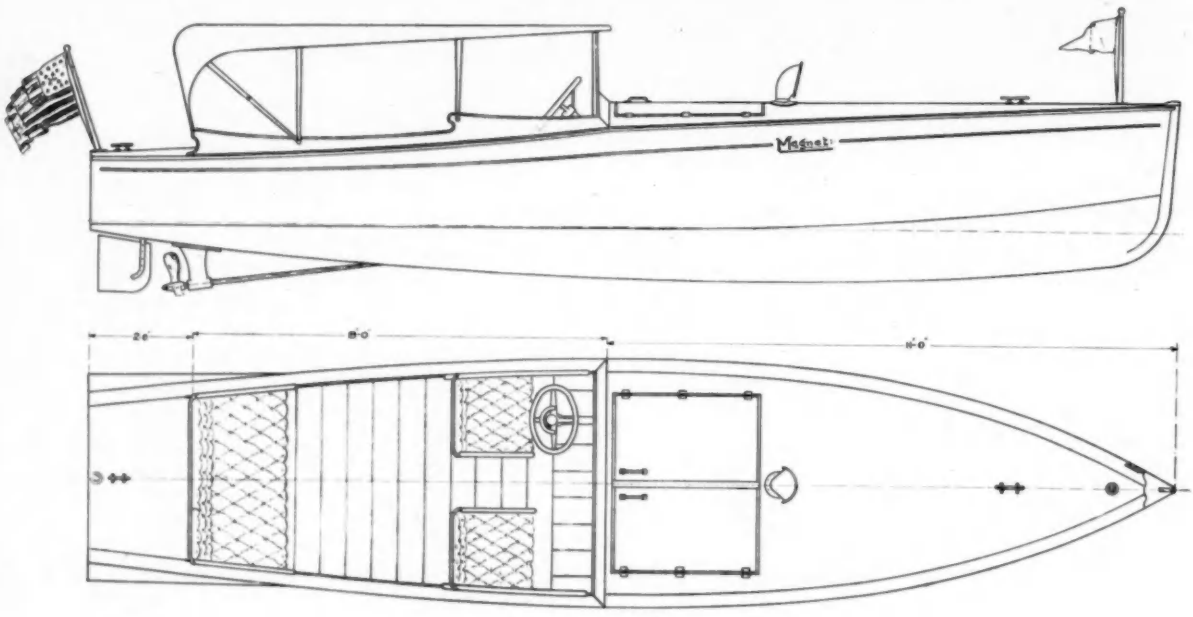
Six Billions of Dollars!

This is the call of Columbia—the staggering appeal that will not be made in vain. The brains and brawn of the nation will arise and prove equal to the crisis, just as the clear-eyed boys of the nation are flinging themselves into the red and raging Tempest Over Yonder.

Nothing that is possible on this planet is impossible in our America! Nothing that this land can do will remain undone. The speed with which we have flung a million men into this world war has shattered all records. The speed with which millions more of men and money will follow this advance guard will challenge human belief.

Wilhelm and his Hussars of Hell have challenged Civilization—and Civilization has knocked the chip from his shoulder!

Six Billions? Yes, and, if need be, Six Billions more!



My Ideal Runabout

No. 8—Magnet, a 21-Footer

By C. E. Bradley

My Ideal Runabout

Magnet, the eighth in the series of Ideal Runabouts, is a sturdy little 21-footer built for comfort as well as speed. The owner of such a craft will enjoy many a speedy and refreshing run at the finish of a hard day's work or week-end trip to some not too far distant pleasure resort.

Built of first-class material, embodying good workmanship and carefully finished the owner of this runabout will have a staunch little boat of which he may well be proud and one that will not be lacking in speed when the other fellow tries to show his transom.

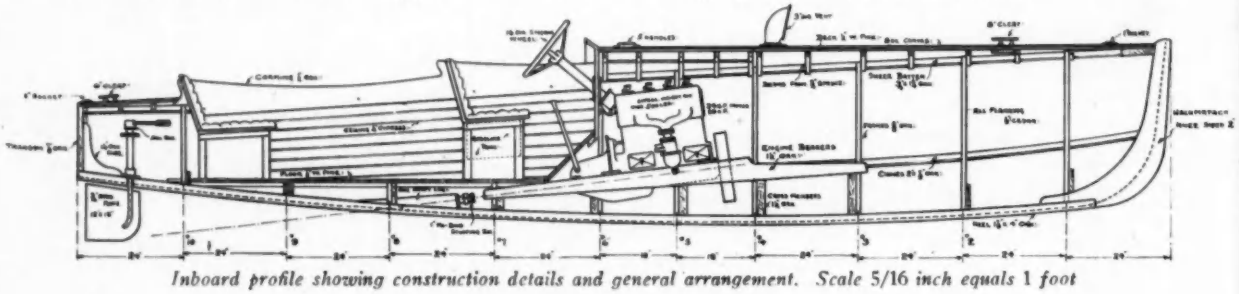
FOR a quick run up or down the river at the finish of the day's work or for a pleasant week-end party sail, a little runabout of the Magnet type as pictured here will certainly serve to advantage. Intended not only for the aforementioned purposes alone, but rather for a full variety of service to which any such small runabout is adapted. She is in brief a splendid little boat for practically all general requirements and also a capable little yacht tender. Her length is 21 feet over all and extreme beam of 5 feet 2 inches allow sufficiently for capacity and steady going without awkward appearance and tubby action.

With high flaring bow and broad midships section running into a graceful tumble-home at the after section she is of just the hull type that has proven so popular in all respects. The interior arrangement as shown in the drawings provides seating accommodations for five persons without crowding.

In further referring to the plans it is to be noted that the forward seats are of the divided type, while the stern seat extends full width in accordance with the usual practice. Full cushion equipment is provided for, which fact together with the arm-chair effect of the coaming rise tends to add greatly to the comfort of the persons who are to be carried.

The steering wheel is located on the port side of the forward cockpit in true auto fashion with motor controls centering within the wheel. The reverse gear lever is centrally located within easy reach of the operator's right hand. Forward of the helmsman's seat and steering wheel is the spacious motor compartment separated from the cockpit by a staunch bulkhead.

The power plant complete as shown on the plans in the inboard profile weighs approximately 475 to 500 pounds. The motor is of the four-cycle, medium-duty type with unit reverse gear, electric starter and full equipment of modern accessories. With the motor developing from 24 to 30 h.p. at 1,000 to 1,100 r.p.m., Magnet should drive at an honest 18 to 20 m.p.h. speed when equipped with the suitable wheel.



Inboard profile showing construction details and general arrangement. Scale 5/16 inch equals 1 foot

Immediately over the motor are the hinged hatches so fitted as to be quite water-tight. These are of extended length and conveniently arranged to open outboard. A 3-inch diameter cowl ventilator of polished brass is mounted on the deck just forward of the engine compartment hatches and provides the means of ventilating the space about the engine.

Two rectangular tanks, well made of stout sheet copper and fitted with splash plates will afford ample storage capacity for adequate gasoline supply. These will be securely placed one under each forward divided seat as high up as seat framing will allow. The oil for lubricating purposes will be carried in a small cylindrical tank securely strapped high up on the inner side of the bulkhead and adjoining the engine.

The cockpit sides are to be sheathed in tongued and grooved (matchboard) cypress of selected quality, and natural finish. An automobile top of the collapsing style and easily handled by one man is also provided for. This should be rather low in regards to height, yet amply long enough to cover the entire cockpit. A complete set of removable side curtains is also required for use whenever occasion demands.

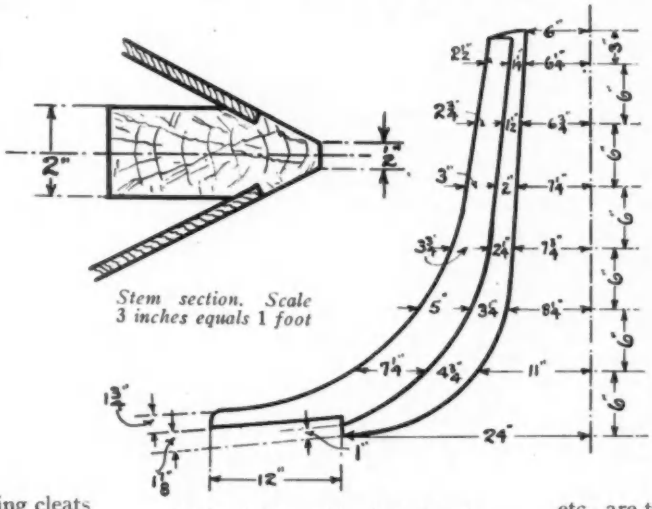
Both the forward and after decks are, of course, canvas covered and well painted. The deck fittings are all of polished brass and consist chiefly of a singie bow chock, flagstaff sockets, and hollow mooring cleats of the sizes indicated on the inboard profile.

A sturdy, plate glass windshield with the framework made from brass molding, the whole shield and farmework so constructed as to be readily removable, is also shown. So arranged, this is quite a desirable accessory and one that will make pleasant going out of many an unpleasant, windy day.

The rudder equipment is of plate brass blade fastened to a brass rod which is inserted through a pipe securely fastened within the boat. Other details of this part of the equipment are clearly illustrated on the inboard profile drawing.

With regards to the materials entering into the actual construction of the craft. For the most part while not unduly heavy they are in all cases of suitable proportion to safely meet requirements. The frame spacings in the immediate vicinity of the engine are of closer pitch than those of the other stations. The frames thus closely spaced add stiffness to the hull at the point where it is most required. The engine bearers are to be of first grade oak from full length stock, securely fastened and carried well out, both forward and aft, in order to increase rigidity and reduce vibration.

The fastenings below the waterline, so far as possible, are to be of brass, but above the waterline good quality galvanized screws, bolts, etc., are just as serviceable and can most certainly be worked in. This is an item worthy of mention and consideration for the reduction in the cost over all brass fastenings will be quite noticeable.



Stem section. Scale 3 inches equals 1 foot

Detail of stern with offsets to rabbet. Scale ¾ inch equals 1 foot

TABLE OF OFFSETS AND HEIGHTS:-

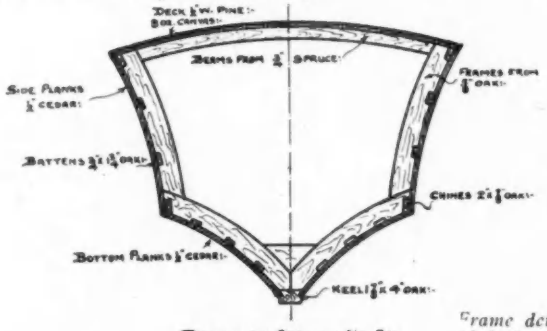
STATIONS	HALF BREADTHS:-					HEIGHTS:-		
	SHEER-	CHINE-	W.L."A"-	W.L."B"-	W.L."C"-	SHEER-	CHINE-	KEEL- (MOLD. LINE)
No. 1:-	0-12-4	0-7-4	0-9-6	0-8-3	0-7-4	0-7-2	2-6-0	3-9-0
No. 2:-	1-8-2	1-1-6	1-4-4	1-3-0	1-2-0	0-8-4	2-8-6	3-10-6
No. 3:-	2-1-2	1-6-0	1-10-0	1-9-2	1-6-6	0-9-6	2-10-4	3-11-7
No. 4:-	2-3-6	1-9-0	2-1-2	1-11-4	1-10-0	0-11-0	2-11-4	4-0-0
No. 5:-	2-5-6	1-10-2	2-2-6	2-1-0	1-11-4	0-12-0	3-0-0	4-0-0
No. 6:-	2-5-6	1-11-2	2-3-3	2-1-6	2-0-4	1-1-0	3-0-0	3-11-4
No. 7:-	2-5-2	2-0-0	2-3-6	2-2-2	2-1-1	1-4-0	3-0-2	3-10¾
No. 8:-	2-2-6	2-0-4	2-2-6	2-2-0	2-1-0	1-6-0	3-0-2	3-9-2
No. 9:-	2-0-6	2-0-6	0-0-0	2-0-6	2-0-6	1-7-4	3-0-2	3-7-4
No. 10:-	2-0-4	1-10-4	0-0-0	1-11-1	2-0-0	1-8-6	3-0-4	3-5-2
TRANSM.	2-0-0	1-8-0	0-0-0	1-8-7	1-10-5	1-10-0	3-1-2	3-4-0

FIGURES HERE GIVEN ARE TO INNER FACE OF PLANKING.

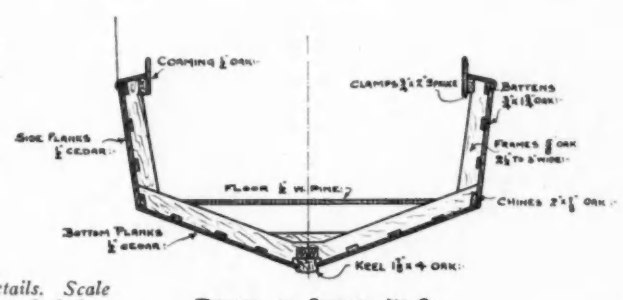
For the outside finish of the hull topsides above the waterline, dull battleship gray paint is my selection. For bottom protection I have chosen first quality anti-fouling mixture in deep green. Three coats in each case well applied in a proper manner, taking care to dry out each coat thoroughly before applying the next one. The canvas covered decks are to be in contrast with a covering of buff deck paint. All oak, including the transom coaming, covering boards, half round moldings, etc., are to be well sanded and finished natural. Three coats of the best spar varnish are here specified with light rubbing between coats with fine sandpaper.

Since the pleasing effect of the whole outfit, and especially the outboard appearance of the boat, will depend wholly on these finishing up details, a thorough painstaking job is to be insisted upon.

A canvas cockpit cover of heavy water-proof khaki duck well stitched and grommeted will also be an article of equipment. This will be rigged over a low, readily removable ridge pole, bent over a rigidly fixed upright support placed just aft of the forward seat.



DETAIL AT STATION NO. 3:-



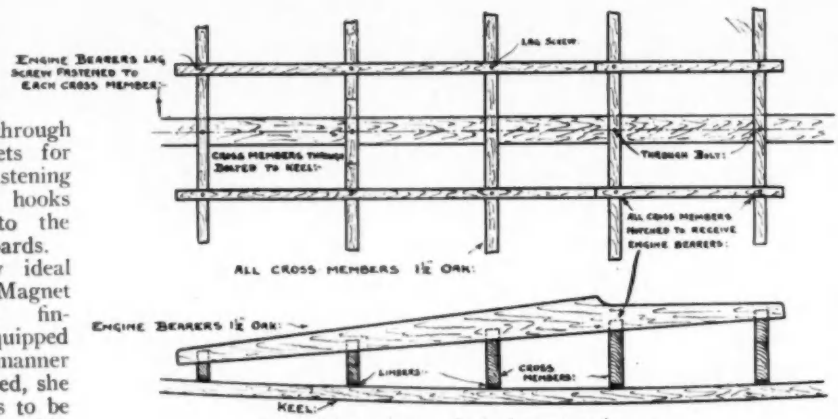
DETAIL AT STATION NO. 8:-

Frame details. Scale ½ inch equals 1 foot

The cover is to be provided with cord lashings through the grommets for quickly fastening on brass hooks screwed into the covering boards.

With my ideal runabout Magnet constructed, finished, and equipped after the manner here described, she is all that is to be desired to withstand continuous service.

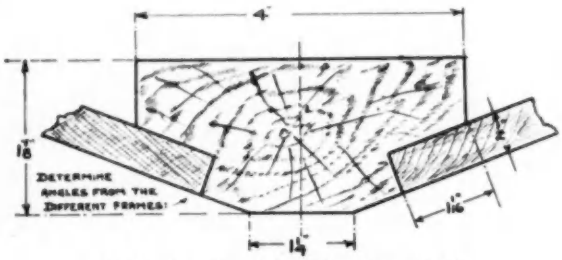
The actual work of building such a boat can be undertaken by almost any amateur builder with a certainty of attaining successful results.



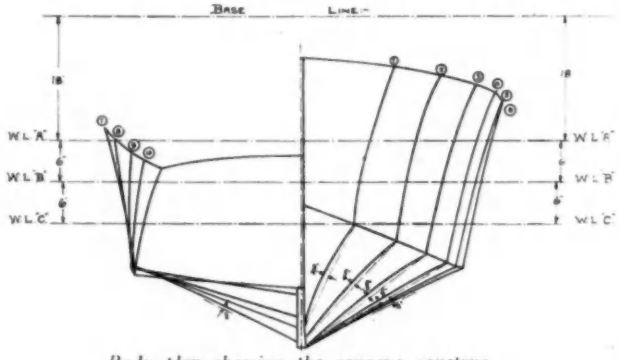
Sketch illustrating method of constructing engine bed. The cross members should be securely fastened to station frames with heavy screws

The details of construction are all quite simple and easily executed if only carried out with common sense.

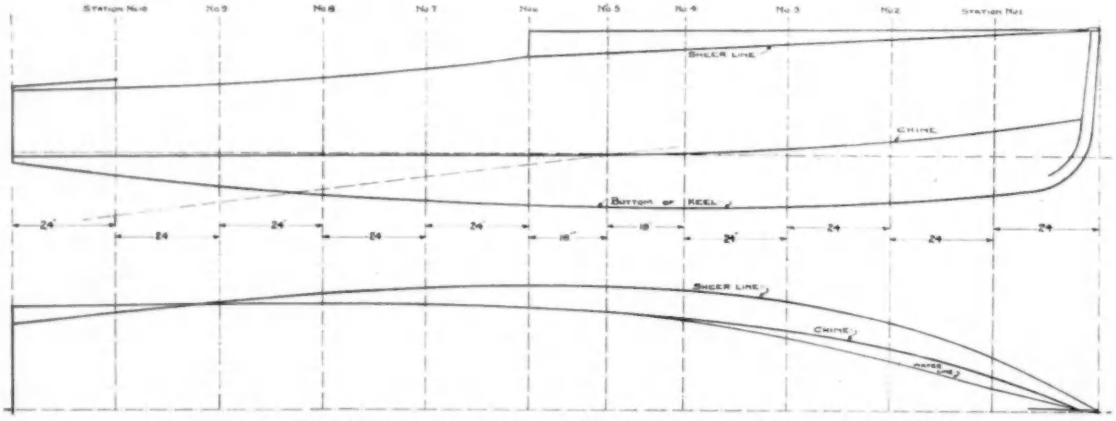
Of course, additional elaboration to meet a variance in requirements (and bulk of purse) can be annexed. Yet for the average boatman of moderate circumstances she will prove quite all that is necessary as here indicated and described.



Sketch of section of keel, showing method of beveling sides and rabbeting to receive garboard strakes. Scale 6 inches equals 1 foot



Body plan showing the concave construction of the bottom. Scale ½ inch equals 1 foot



Outboard profile and lines, and location of station frames. Scale 5/16 inch equals 1 foot

Four Ways of Figuring Tonnage

To many persons who are not experienced ship-builders, the various uses of the term "tonnage" in relation to the size of a ship may be confusing. The following article from the "Pusey & Jones Shipbuilder" explains the terms well and makes a clean distinction between the various ways in which they are used:

There are four kinds of tonnage in use in shipping circles. They are gross tonnage, net registered tonnage, dead-weight carrying capacity, and displacement.

Dead-weight tonnage is what the yessel actually can carry in tons of heavy cargo, plus stores and coal.

Gross tonnage is based on the cubic contents of the hull, with certain arbitrary spaces deducted, and has little bearing on the cargo-carrying capacity of the vessel.

Net registered tonnage is gross tonnage, with certain allowances for crew space and machinery space deducted, and has little bearing on the dead-weight carrying capacity of the vessel.

Displacement is the total weight of the vessel when full of cargo—that is, the weight of her hull plus her dead-weight tonnage.

Storage Batteries for Motor Boats

Some Hints for the Installation and Care of Storage Batteries Used in Connection With Lighting and Ignition Systems

IF a storage battery is to be used aboard a boat the very first requirement for successful, continuous service is that the battery must be properly installed. Batteries must be accessible to facilitate regular adding of water to, and occasional testing of, the solution. The battery must be on a level shelf or floor. The compartment must be ventilated and provision made for drainage. It must protect the battery from water, oil, and dirt. There should be an air space on all sides of the battery, and it should rest on cleats rather than a solid bottom. Means must be provided to keep it from sliding around as the boat rolls and pitches.

Many a good battery is condemned as worthless simply because it was thrown into the bottom of some locker way down near the bilge, more or less equipment—or junk—piled in around or even over it, and then expected to give good service with no care or attention.

The battery compartment must be kept wiped dry and clean, and everything but the battery kept outside. If moisture is allowed to collect it is liable to cause a partial short circuit and slowly discharge the battery. Should any of the solution be slopped over or spilled it should be mopped up with waste wet with ammonia water.

As to the care of the battery itself, one of the most important items is the level of the solution or electrolyte within the cells. This must be kept up to the height indicated on the name plate or in the instructions, in any case the solution must cover the battery plates. The frequency with which water must be added depends largely upon the battery, the system with which it is used and the conditions of operation. It is well to check up the height of the solution at least once every two weeks. If one cell repeatedly requires more water than the others it indicates that the jar is cracked and that the battery should be sent to a service station for repairs.

When filling up the cells of a battery never add acid or electrolyte, always use pure water free from all salts. Distilled water obtained from a battery service station is without question the most satisfactory to use.

It is a common belief that rain water, collected as it runs off a roof, is as good as distilled water. This is far from true. During the dry, clear weather the dust, containing every kind of impurity, collects on the roof. This is washed off and carried along with the rain water and often contaminates it to a much higher degree than the ordinary household water supply. Its one redeeming feature is that it is soft, that is, free of lime.

Undoubtedly the best way to determine the condition of a battery is by the use of a hydrometer. These are made up in the form of a syringe so that the electrolyte can be drawn up from the cell, the specific gravity read, and then returned to the cell without danger of spilling it around.

A fully charged battery will show when tested with the hydrometer a reading of 1,275 to 1,300 and when half charged will read about 1,200. If the reading is below 1,150 it indicates that the battery is completely discharged. Always make the hydrometer test before adding water or the reading may not indicate the true condition of the cell.

When a battery is in good condition the specific gravity of all the cells should be nearly the same. The hydrometer readings should not vary over twenty-five points for the different cells. If the gravity of one cell is fifty to seventy-five points below the others and the jar does not leak it indicates a partial short circuit within the cell, and if neglected may seriously injure the battery. The best course is to send it to a good battery man or a service station.

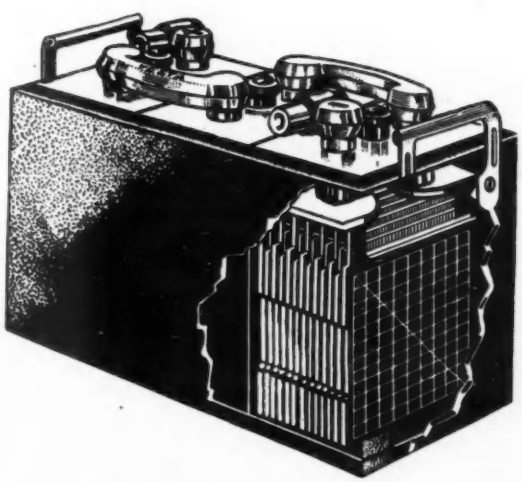
If, after being fully charged, the battery soon runs down again it indicates that there is trouble somewhere else in the system or that the rate of charging was far too high. Putting acid or electrolyte into a cell to bring up the gravity can do no good and may do great harm. A run down battery should be given a full charge at once.

A battery is fully charged when, with the charging current flowing at the rate given in the instructions, all cells are bubbling freely and evenly and the gravity of all cells has shown no increase during one hour. The best results are obtained with a storage battery system when the system is so designed and adjusted that the battery is normally kept well charged, but without over charging or exceeding the given rate of charge.

In charging from an outside source use direct current only. Limit the charging current to the proper rate in amperes by connecting a suitable resistance in series with the battery. Incandescent lamps are a convenient form of resistance for this purpose. Connect the positive terminal of the battery (painted red, marked POS, P or +) with the positive wire and negative to negative. The polarity of the charging circuit can readily be determined by putting the ends of the two wires in a glass of salt water, when bubbles will form on the negative wire in greater quantity than on the positive.

A battery that is to stand idle should be fully charged and the leads disconnected so that it cannot be discharged by slow leakage through any defective insulation or apparatus. A battery not in active service may be kept in condition for use by giving it a freshening charge at least once in every two months, but should preferably also be given a thorough charge, after an idle period, before it is replaced in service. It is not wise to permit a battery to stand for more than six months without charging.

As it is impossible to absolutely prevent any of the electrolyte from getting outside of the battery it is well to give the inside of the battery compartment a coat of black asphaltum varnish, and the terminals and leads a coat of vaseline.

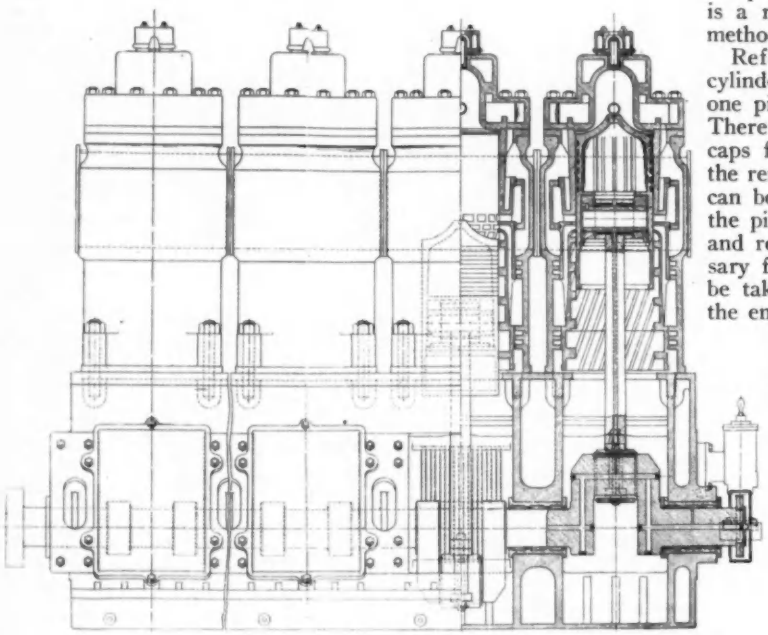


Interior construction of a typical 6-volt storage battery showing the three cells within the outer case and closely packed positive and negative plates, each kept from coming into contact with its neighbors by a thin wood or hard rubber separator

The Weiss Oil Engine

A New Marine Motor with Several Novel Features

CARL W. WEISS, who far many years was associated with the old Mietz & Weiss Engine Company, and who is now connected with the Weiss Engine Co., of 17 Battery Place, New York City, is credited with having in 1894 designed, built, and patented the first practical surface-ignition, medium-compression, two-cycle oil engine, and is, in consequence, frequently referred to as "the Dean of oil engineers." Since that time Mr. Weiss has been designing and building this same type of engine, gradually refining his design, perfecting details and widening the scope of the heavy-oil motor.



Elevation and section showing the new type piston assembly and the diagonal groove-like ports in the lower part of the cylinder wall that aid in the scavenging

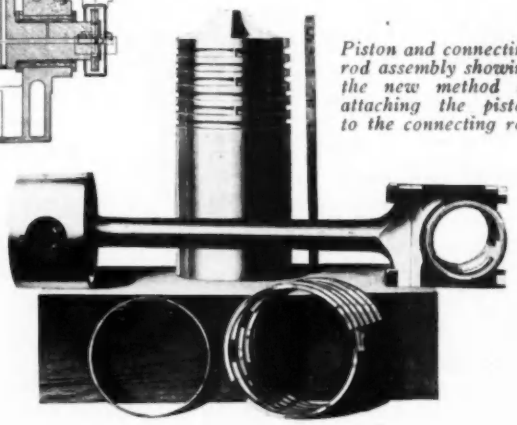
His latest developments have been incorporated in the new series Weiss engines, now coming through production. The engine illustrated herewith is a 400 b.h.p. four-cylinder engine of the single-action, two-cycle type, embodying the new Weiss method of scavenging.

In the ordinary type of surface-ignition, medium-compression oil engines, a baffle-plate piston is normally used in conjunction with crankcase compression for scavenging. The baffle-plate piston, by its very construction, led to uneven thicknesses of metal, which, in its turn, led to uneven contraction and expansion and frequently resulted in cracked piston heads. Mr. Weiss has experienced this trouble, as have all designers of heavy-oil engines, and he has experimented extensively to do away with this rather serious defect. By referring to the accompanying illustrations, it will be seen that the piston in this new engine is conical, which is a rather radical departure from accepted methods.

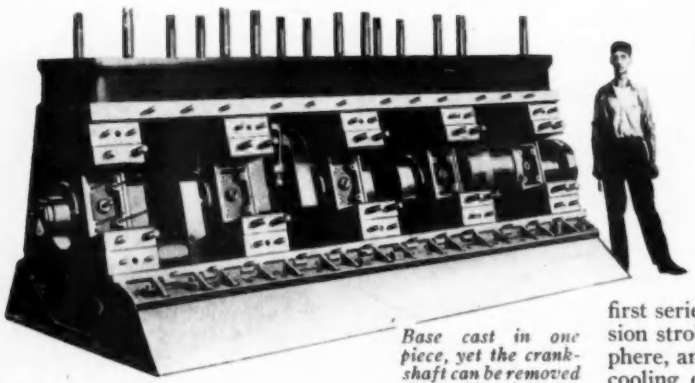
Referring again to the drawings of the four-cylinder engine, there is a crankcase cast in one piece, to which the cylinders are bolted. There are five bearings with regular bearing caps for access to the bearing bushings, and the removal of the crankshaft sidewise, which can be done without interfering with any of the piping or fittings attached to the engine, and requiring much less room than is necessary for engines in which the shaft can only be taken out lengthwise, or in others where the entire upper engine, that is, all the cylinders complete with upper part of the crankcase must be raised. The air suction valve in this size is attached to the crankcase cover.

The bone of contention regarding the relative efficiency of the surface-ignition, medium-compression, has been scavenging, it being contended that previous types of this style have not completely burned the charge or completely cleared the cylinder of burned gases after each explosion. In this new engine, Mr. Weiss has incorporated an entirely new method of scavenging. There are three annular sets of piston control ports, (1) the exhaust, (2) the supplementary, and (3) the crankcase port. The supplementary ports are open to either atmospheric or under low pressure of air supplied by a small-pressure blower. As the piston uncovers the first series, the exhaust ports, near the end of the expansion stroke, the pressure in the cylinder drops to atmosphere, and, due to the abrupt discharge and the forcible cooling of the gases, the pressure goes down to sev-

(*Continued on page* 48)



Piston and connecting rod assembly showing the new method of attaching the piston to the connecting rod



Base cast in one piece, yet the crankshaft can be removed from side of engine

New Six-Cylinder Scripps Motor

A SMALL six to take the place of the much used big four-cylinder motors—that has been the ideal of the Scripps Motor Company while developing their new six-cylinder unit power plant. This new motor has all moving parts, including the flywheel, enclosed, thus insuring quietness of operation and cleanliness of motor and engine compartment.

In designing this motor the builders have incorporated in their latest model all of the best features of their earlier designs and their twelve years of experience in building marine motors. This motor is built in two types — high speed, 60-75 h.p., weighing 1,100 pounds, and medium duty 35-46 h.p., weighing 1,425 pounds. Both types have a 4¼-inch bore and a stroke of 6 inches.

In this motor the cylinders and upper half of the crankcase are of semi-steel, assuring long life to the cylinders and a base that will hold the main bearings true to line. The lower half of the crankcase, flywheel housing and reverse gear housing are of aluminum, and the foundation lugs are so arranged that the engine stringers may pass the flywheel without notching.

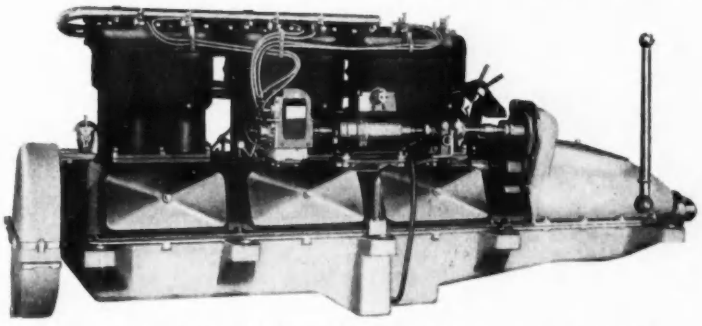
The pistons are of special close-grained cast iron. The connecting rods, crankshaft, and camshaft are forged from open-hearth steel, heat-treated and ground accurately to size.

A notable feature is the size of the bearing. The main crankshaft bearings are 2⅜ inches in diameter by 4 inches long, and the crank-pin bearings are 2¼ inches in diameter and 2⅞ inches long. Piston-pin bearings, 1¼x2½ inches.

The camshaft, 1¼ inches in diameter, is driven by a Morse silent chain with 1½-inch face and provided with length adjustment. The accessory shaft operating the pump, generator and magneto is also driven with a 1¼-inch Morse silent chain with length adjustment.

Lubrication is by means of a pressure feed oiling system through the crankshaft. The oil flows back to a sump, where it is cooled by a coil of copper tubing carrying water from the circulating pump. There are only two grease cups, and these are on the water pump. The amount of oil in the sump is shown at all times by an indicator located just below the generator.

The electrical equipment consists of a Dixie magneto and a two-unit Leece-Neville starting and generating set with a Willard storage battery of ample size.

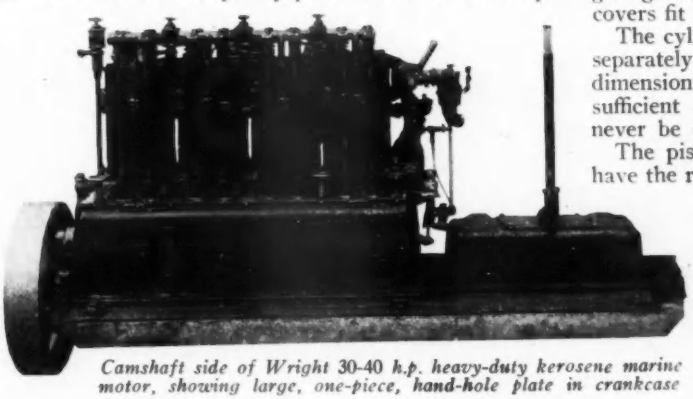


The new six-cylinder, 60-75 h.p., Model D-6 Scripps unit power plant

Accessibility is the keynote of the entire design. The cylinder heads are detachable, so that the pistons can be removed without disturbing the cylinders. The crankcase is provided with extra large hand-hole plates, and the accessories are so located that they offer no obstruction to removing the hand-hole plates. An ordinary wrench will handle every bolt and nut on the motor, so that no special tools are required.

The Wright Kerosene Marine Motor

OF the new kerosene motors those built by the Wright Machine Co., of Owensboro, Ky., are of more than usual interest. They are built with two, three, four, and six cylinders, having a bore of 6 inches, with 7½-inch stroke for the light model and a bore of 7½ inches with a 9-inch stroke for the heavier engines. The power developed ranges from 20 h.p. for the smaller two-cylinder motors and up to 90 h.p. for the large six-cylinder engine. They are all of the valve-in-head, four-cycle type with integral reverse gear in oil-tight housing making a unit power plant. These motors are all of heavy-duty pattern and intended especially for service in commercial craft or heavy cruisers and are of heavy construction throughout.



Camshaft side of Wright 30-40 h.p. heavy-duty kerosene marine motor, showing large, one-piece, hand-hole plate in crankcase

Starting at the bottom to describe the engine, the base is of cast iron, webbed and braced to insure stiffness and perfect alignment of the crankshaft and reverse gear.

The upper base is also of cast iron and well braced. On the camshaft side of the motor the entire side of the upper base is removable in one piece, giving unobstructed access to the camshaft assembly. The manifold side is provided with extra large hand-hole plates, thus giving access to both sides of the connecting rods. All covers fit oil-tight and are easily removable.

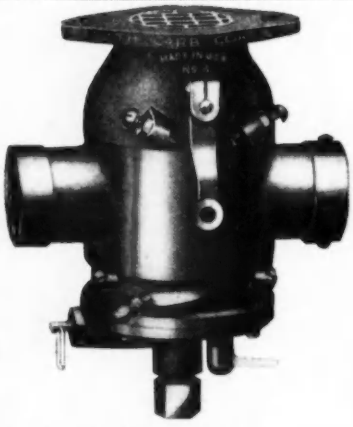
The cylinders are of a special close-grained iron cast separately and provided with water jackets of ample dimensions. The cylinder heads are detachable, with sufficient water space to assure that the valves will never be overheated.

The pistons are made as light as possible and still have the required strength. The wrist pins are of steel, hollow, hardened, and ground, and securely held in place by set screws with lock nuts, and as an extra precaution a spring-steel wire through the set screws to prevent their working loose. The piston rings are of the eccentric type, with square lap joints, and are finished to a true circle after being cut. This insures a perfect fit and good com-

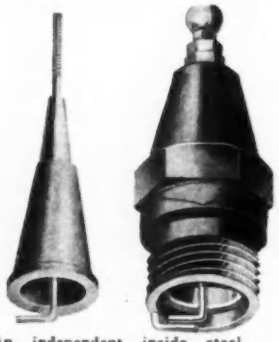
(*Continued on page* 46)

New Things for Motor Boatmen

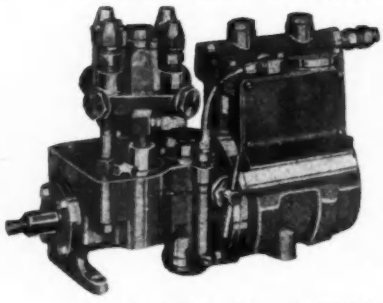
Each month new parts, attachments, and fittings, interesting and invaluable to owners of large and small motor boats, are added to the devices already on the market. Announcements of these articles come to us in such numbers that in order to introduce all of them to our readers we have been obliged to omit descriptions and publish only illustrations with short explanatory captions. In doing this, however, we urgently invite our readers to write us for complete information, as we shall take the greatest pleasure in providing it, together with the name and address of the manufacturers from whom the products may be obtained.



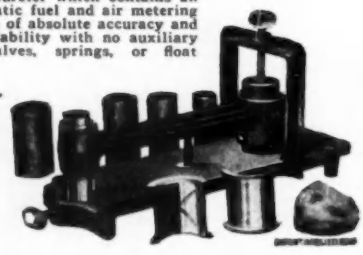
A carbureter which contains an automatic fuel and air metering system of absolute accuracy and dependability with no auxiliary air valves, springs, or float



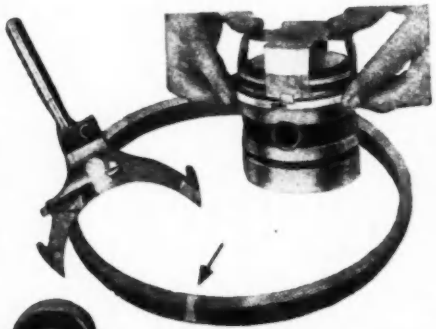
An independent inside steel shell made on a taper to fit the outer shell protects the insulation. The entire plug is assembled from the bottom and is proof against gas leakage



The lightest and most compact starter, yet will start any marine engine of any size or power, in any kind of weather or sea



A novelty in the way of piston ring renewals. The rings are slightly oversize. Each carton of rings contains a tool with which to true up and enlarge the grooves in the piston and a little device to assist in slipping the new rings on

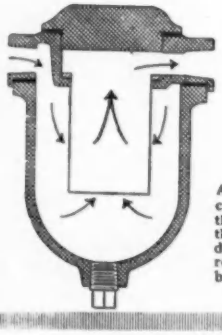


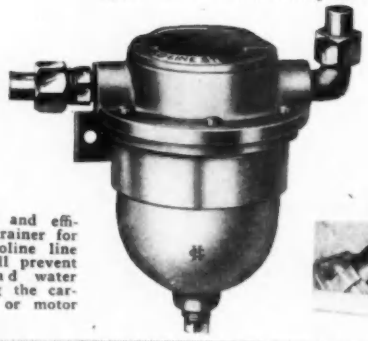
This babbitter for connecting-rod bearings should prove valuable to every repair shop. It will take any ordinary length of rod. The outfit includes four standard size mandrels. Other sizes can be turned in the shop from wood so that the tool is of unlimited use

A spring-head tool holder for finishing in a lathe or planer so designed that it cannot gouge or dig in. It is not intended for rough cutting or hogging, but for fine finished work and absolute accuracy. Adjustable for different tools

The use of electrical appliances aboard motor boats is steadily increasing. It is now possible to secure electric soldering irons in three sizes and an electric grill with one deep and one shallow pan and deflector plate for toasting, broiling, frying, or boiling that are designed to be used on a 32-volt storage battery circuit. Also an electric cigar lighter for a 6-volt battery circuit

A lock that will absolutely prevent the use of a motor boat for joy-riding without the owner's knowledge. It locks the steering gear





A new and efficient strainer for the gasoline line that will prevent dirt and water reaching the carbureter or motor

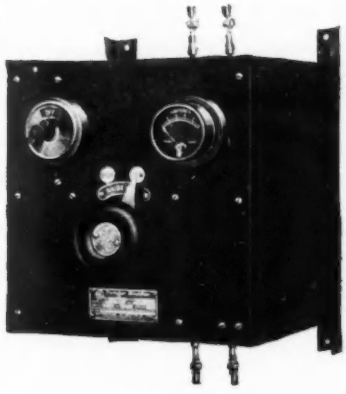
Do not fail to write to the editor if you desire information concerning any of the above new things

A spark plug terminal that has no nuts to tighten or loosen or drop into the bilge. The jaws are threaded on the inside and engage the threads on the spark plug electrode, and cannot be shaken loose. One motion raises the locking ring and frees the terminal from the plug

Do you have trouble with your storage battery? Possibly it does not hold its charge. Here is an outfit that will prove a great aid in taking proper care of the battery. It consists of a bottle holding distilled water and a hydrometer that will indicate the condition of the battery

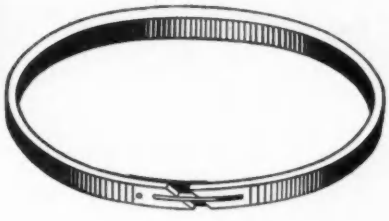
This carbureter air cleaner will separate all dirt, dust, water, and other impurities from the air drawn into the cylinders through the carbureter. It is particularly valuable on commercial boats carrying dirty or dusty cargoes. It will keep the oil cleaner and reduce wear in the entire motor

Have you a real efficient bilge and fire pump on your motor boat? This pump, made especially for marine purposes, is built in eight sizes



A new rectifier for use in charging storage batteries has recently been put on the market. It is made in sizes suitable for private or yacht club use

A muffler that it is claimed will increase the power by decreasing the back pressure. It is substantially made of cast iron throughout

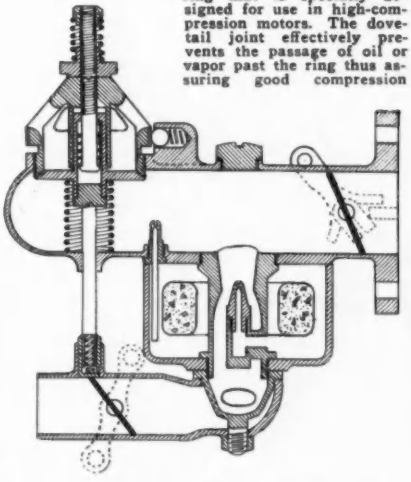


A one-piece oil-proof piston ring that is specially designed for use in high-compression motors. The dovetail joint effectively prevents the passage of oil or vapor past the ring thus assuring good compression

This new cushion coupling will prevent the transmission of shock or vibration from one shaft to another. It is not a flexible coupling but will take up slight differences in alignment. All parts are interchangeable and easily renewed

Do you have trouble with carbon in the cylinders or on the spark plugs? This device injects a spray of air and water into the manifold that is quickly turned to steam in the cylinder and helps prevent the formation of carbon

A double-acting glass barrel oil pump for mounting on the bulkhead. With this pump there is no guesswork, the amount of oil pumped is directly visible



A new carbureter of the jet type that is made with both one and two nozzles. There are no needle valves or gasoline adjustments, all regulating being done by means of the air valves

Do not fail to write to the editor if you desire information concerning any of the above new things

Personalities

Some of the Men Who Have Helped to Give the Motor Boating Industry Its Present Standing

A. H. Nelson
George Hesse, Jr.

As an example of what can be accomplished by a manufacturer who put quality before quantity, and who considered satisfied customers his greatest asset it would be hard to find an equal of the Nelson Blower & Furnace Co., of Boston, Mass.

Organized four years ago to manufacture blowers for industrial furnaces the plant has expanded until now it is

A. H. Nelson

one of the most prosperous in New England. Starting with a force of eight men and a small shop the business has grown steadily until today they have a force of nearly 800 men and the weekly payroll exceeds $25,000.

Looking into the future and realizing the demand for a cheaper fuel than gasoline for internal combustion motors, the President, A. H. Nelson, took over the manufacture of the Galusha gas producers and secured the services of the inventor, Mr. Galusha, thus assuring the success of the producers in service. These producers are particularly adapted for marine service and are the most economical source of power for boats. They are built in sizes ranging from 18 to 350 h. p.

The Nelson Blower & Furnace Company now occupy two spacious buildings in which they manufacture grinding machines and special machinery in addition to the Galusha producers. George Hesse, Jr., the general sales manager, was the western representative of the company for several years with headquarters in Pittsburgh. He, too, believes that quality and service are the foundation of success and has been no small help to Mr. Nelson in building up the business to its present size.

J. Murray Watts

The well-known Naval Architect, J. Murray Watts, of Philadelphia, Pa., has been commissioned a captain in the 57th Engineers (Inland Waterways) for service abroad. For many years Mr. Watts has been one of the most prominent designers of motor boats, yachts, and commercial vessels in this country. He received only a few days'

Capt. J. Murray Watts

notice before having to report for active service and is now probably on his way overseas.

The business carried on in Mr. Watts'

R. A. Stranahan

name will be handled by the engineering firm of Cornell & Matthews, Naval Architects and Engineers of Philadelphia.

R. A. Stranahan

As president of the Champion Spark Plug Co., of Toledo, O., R. A. Stranahan heads the concern that manufactures those little but mighty important things known to motor boat enthusiasts as spark plugs.

Bob Stranahan was born in Buffalo in 1887 and received his high school

H. N. Trumbull

education in Boston and Brookline, Mass. At the age of eighteen, he entered Harvard, where he completed a four-year course in less than the required time, graduating before he was twenty-one.

Always a lover of outdoor sports, he developed fast while at college. He was a crack quarter-miler and at tennis and golf he could hold his own with the best of them. Today at the age of thirty-one, he ranks among the leading amateur golfers in the country. He

George Hesse, Jr.

was one of the few amateurs entered in the annual United North and South open tourney held recently at Pinehurst, N. C., where he lost one of the toughest matches of his career after playing through to the finals.

His success as a sportsman is unusual to say the least, considering the fact that he has devoted practically all of his time during the last ten years to business. In that time he has built up a commercial success that has few parallels in history. Starting in 1910 to manufacture spark plugs in a small way, he has built up an industrial organization that today stands first in the world as a producer of quality spark plugs by quantity manufacturing methods.

H. N. Trumbull

About ten years ago the S. K. F. Ball Bearing Co. of Gothenburg, Sweden, opened a sales office in New York City. The demand for these bearings soon became such that it was found necessary to start an American plant. In the spring of 1916 the S. K. F. Ball Bearing Co., of Connecticut moved into their Hartford plant.

H. N. Trumbull, the advertising manager of the S. K. F. Ball Bearing Company, was born in the seaport village of Stonington, Conn., and so has a natural liking for things nautical. He was educated in the schools of Hartford, Conn., and Union College, Schenectady, and was with the General Electric Company before taking up his present work.

That he has successfully handled the advertising of the company is shown by the growth to double the size of the plant to meet the ever-increasing demand for their product.

Yard and Shop

Notes of Interest to Both Owner and Manufacturer

A New Life Preserver Suit

A NEW safety suit is being brought out by the G. H. Masten Co., Inc., of New York City, to be known as the Universal Safety Suit. This is of the type which protects the wearer from exposure and discomfort as well as from drowning, enclosing the body completely in a water-proof suit for which are claimed several advantages not to be found in any other life preserver suit.

One unique feature which distinguishes the Universal Safety Suit is a head-piece which can be adjusted to cover the head completely, with celluloid eyepieces and a water-proof breathing tube. This makes the suit a veritable water-proof compartment which contains enough air for breathing without discomfort for five minutes or more. When the wearer jumps from the deck of a ship or is drawn under water he is completely protected, as the great buoyancy brings him to the surface before any discomfort is experienced. On reaching the surface a plug can be removed from the breathing tube, or the head-piece can be loosened and adjusted as a hood, leaving only the face exposed. Another advantage is that the wearer can recline at ease in the water, swim or float in any position at will, because no weights are used in the feet.

The suit is made of heavy rubberized material, and the buoyancy is nearly double that required by Government life-preserver regulations, so the wearer can easily support five or six other persons in the water. No air cells are used, so the suit is still safe if torn or damaged.

The G. H. Masten Company has opened a display room and store in the Concourse of the Hudson Terminal Building, 50 Church St., New York City, where the Universal Safety Suit will be sold. It is also intended to show a full line of the Masten products, including boat tops, spray hoods, life-preserver jackets, cushions and pillows, upholstery, etc. Completed boats, engines, and other marine accessories will also be handled.

Restaurant Facilities for Industrial Plants

The Industrial Service Section of the Emergency Fleet Corporation publish a sixty-four-page booklet, entitled "Restaurant Facilities for Shipyard Workers," by Frederick S. Crum, that should be invaluable to manufacturers who must provide restaurant facilities at their plants. It states very clearly the advantages of feeding the employees at the plant and relates the experience of several plants.

Plans showing the arrangement and type of restaurants that have proved successful as well as photographs of the interiors show what has been accomplished. The restaurant equipment and sanitation are thoroughly discussed as is the administration and management. The subjects of menus and accounting, two important essentials, receive considerable attention.

Mercer, a Pacific Coast boat powered with a Van Blerck motor and driving the propeller through a reverse gear

Parts for Ferro Motors

The Ferro Machine & Foundry Company announce to owners of Ferro motors that their service department has been taken over by the Standard Motor Parts Co., of Cleveland, O., and that all repair parts should in the future be obtained from the latter company, who will carry a large supply in stock.

Bosch Impulse Starter

One of the many reasons why the magneto is so firmly established as the supreme ignition system is the fact that it does not depend upon any other unit or units for its electrical output and distribution of current.

The magneto transforms mechanical energy into electrical energy. The moment the shaft of a magneto-equipped engine revolves, the magneto begins to generate electrical energy for ignition and, following requirements, the higher the rate of speed at which it is driven the more intense are the sparks.

To facilitate starting when necessary, the Bosch magneto can be supplied with an impulse starter, which automatically speeds up the magneto armature at the exact moment of firing the initial gas charge or charges, thus providing at even low speeds the full electrical capacity of the magneto.

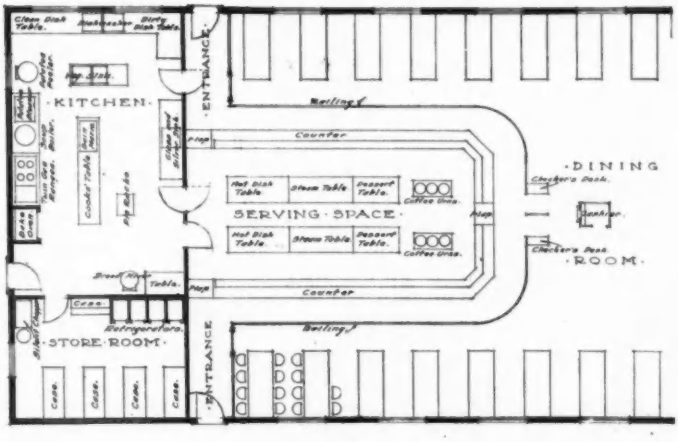
In a word, the Bosch impulse starter or coupling is a mechanical device for the purpose of obtaining positive and efficient starting without the aid of batteries or a battery system of ignition.

The impulse starter is located between the magneto drive and the armature; when the engine is cranked or barred over, the armature is held stationary, while energy is being stored up by the compression of a series of springs. At a predetermined moment the springs are released and the armature is given a partial revolution at high speed. In this way, intense sparks are provided and the engine given its starting impulse, and easily started.

As soon as the engine commences its regular operation, or attains a speed of about 120 r. p. m., the impulse starter is automatically disengaged, the starter transmitting the driving energy to the magneto as a flexible coupling.

The function of an impulse starter demands a strong, simple, reliable, and rugged mechanism, properly balanced and of sufficiently generous dimensions to develop the power necessary for effective performance.

The design of the Bosch impulse starter embodies all of these details, and is therefore entirely different from



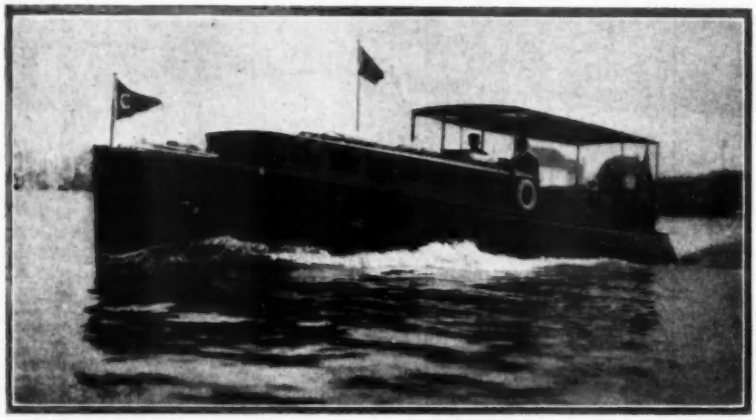
A typical industrial plant restaurant plan as shown in "Restaurant Facilities." This little booklet contains many such plans and a number of interior views of restaurants

anything of its kind hitherto available. It is totally enclosed in a dust- and water-proof aluminum housing, and is integral with the magneto itself.

The operating parts are all high-grade steel, giving a high factor of safety, and built to withstand indefinitely the sudden stresses to which they are naturally subjected.

The spring action is carefully balanced, imparting an even torque to the armature, and eliminating all possible vibration. Unlike other devices of similar name, there is no added strain carried by the magneto bearings, the heavier part of the starter being carried on its own sleeve bearing.

The control of the starter is by means of a lever mounted on a shaft projecting from the front of the housing. The lever is so constructed that it can either be operated by hand or through the medium of a control connection.



Charlou II, Commodore W. F. Metzgers, Sterling powered cruiser that was designed by Bowes & Mower and built by the Mathis Yachts Bldg. Co.

Duesenberg Opens Washington Office

The Duesenberg Motors Corporation has announced the establishment of a Washington office in the Munsey Building in order to facilitate their intercourse with the various Government Departments, as their entire facilities are being devoted to the execution of Government contracts. N. G. Rost, general sales manager, formerly located at 120 Broadway, New York, is making his headquarters at Washington for the duration of the war. The Duesenberg Corporation will be glad to have its friends make use of this new office whenever convenient.

Van Blerck Motors

The Van Blerck Motor Co., of 30 Church St., New York City, have recently issued a new catalog that in artistic make-up, illustrations, and descriptive matter is far ahead of their previous publications.

In the first part of the book are illustrated and described fifteen well-known Van Blerck powered boats varying in size from a small speedy runabout to a 109-foot auxiliary schooner yacht, and including Whippo'Will Jr., that just won the One-Mile Championship at Detroit and the Canadian International Championship races at Toronto, Canada.

The illustrations in the back half of the catalog show clearly the construction and equipment of the new four-, six-, and eight-cylinder models, all having a bore of 5½ inches with a stroke of 6 inches. The descriptive matter covers all details of the motor and its equipment and includes a comprehensive specification of the new models.

Toppan Boat Mfg. Co. Moves

On September 1 the Toppan Boat Mfg. Company moved their Boston salesroom and office to Medford, Mass. (twelve minutes' electric car ride from Boston), where they have built an exceptionally attractive office and salesroom and where they will be pleased to see their friends and give them the usual warm reception. The move is a good one, inasmuch as the location of their Medford plant is ideal, being one of the most attractive spots on the Mystic River, and very familiar to the automobiles who have to pass the factory on their way to the North Shore.

The Toppan company has been exceptionally busy during the last few months on war orders, also are selling a large number of their bank or fishermen's dories, and Swampscott power dories for fishing and many of their heavier boats for commercial work. They will be pleased to mail one of their catalogs to anyone writing them for the same.

Blighty, a 45-foot V-bottom express cruiser designed by Wm. H. Hand, Jr., and powered with a Model F8 Sterling motor that gives a speed of 20 m.p.h.

Exports to Norway

The War Trade Board announce the adoption of the following regulations governing the procedure with respect to the issuance of licenses for the exportation of commodities to Norway. Previous rulings with respect to such regulations (W. T. B. R. 103, May 10, 1918; W. T. B. R. 126, June 3, 1918) are hereby withdrawn.

1. Application for licenses to export commodities which are not controlled by a Norwegian import association will not be considered unless the prospective importer has given a guarantee certified by the Norwegian Finance Department and further certified by an American consul in Norway, who will furnish the importer an identification number. The ruling requiring this identification number to be accompanied by a code word has now been withdrawn, and this certificate will hereafter bear only an identification number. This identification number should be forwarded by the importer to the prospective exporter in the United States and specified on Supplemental Information Sheet X-106, which should be attached to the application for an export license.

2. Application for licenses to export commodities which are controlled by a Norwegian import association will not be considered unless the prospective importer in Norway has secured a certificate covering the proposed shipment from the appropriate Norwegian import association. This certificate must be either issued or confirmed subsequent to May 10, 1918.

In filing an application for a license to ship commodities controlled by an import association, the shipment must be consigned to the association which has issued the certificate, and the exporter is required to state on the application the name of the person or firm in whose favor the import certificate was issued. (*Continued on page* 50)

MoToR BoatinG to Remain MoToR BoatinG

(Continued from page 7)

traneous matter of any sort will be used. MoToR BoatinG now and for all time will be the most interesting magazine ever published devoted entirely to the sport and marine industry.

The trade also expressed a keen interest in our welfare and future. When our plans to continue along strictly boating lines was announced to them, they, too, appeared to be 100% pleased and glad that the magazine which has almost double the circulation of any other boating paper was to continue to serve their interest as well as to promote interest in boating among the yachtsmen of the country.

We ourselves are most enthusiastic about the future. After the war is won and the thousands and thousands of young men come back to civilian life, men who have been trained during the war period to love the water and who never before knew any of its pleasures, all of them are going to become motor boatmen and the sport and industry will boom and expand tremendously.

The development in hulls and power plants as a result of knowledge and experience gained during the last two years will tend to make motor boating more popular and desirable than ever before. Equipment will be available for use in boats which will develop racing and cruising more in one year than they have advanced in the past ten. Already all signs point to a wonderful increase in the use of motor boats after the war. An unrest is everywhere apparent among the one-time yachtsmen to get back into the game as soon as peace is declared.

Our readers can help us very materially by telling us how we can improve upon MoToR BoatinG and how our plans for the future meet their own ideas on the subject. Our columns will always be open for a free discussion of any phase of boating by our readers.

In order to meet the Government's new paper restrictions without reducing the number of pages or circulation of MoToR BoatinG, the size will be 8½ x 11¼ inches.

Another change in our policy which we feel sure will be appreciated by all of our subscribers will be the moving forward of our date of issue, so that MoToR BoatinG will be on sale in every city in the country on the 29th of the month, practically a week earlier in many cities than formerly.

The change in our plans from those announced in the August issue of MoToR BoatinG came at the moment we were about to go to press with the first issue of Scientific Mechanics. All could not have happened at a more inopportune time, and as a result it was a physical impossibility for us to issue a September number. However, we will be the only losers as the date of expiration of each subscription will be moved forward one month, and each subscriber will receive as many copies of MoToR BoatinG as though the temporary halt had not occurred.

Miss Detroit III Wins the Gold Cup

(*Continued from page* 10)

of them were 20-footers, built and raced by the Smith Boat and Engine Company. The winner, Miss Detroit III, was entered by the Detroit Yacht Club and was built by popular subscription donated by citizens of Detroit. She was driven by Gar Wood, the owner of Miss Detroit II. Miss Detroit III was powered with the twelve-cylinder Curtiss airplane motor which was formerly in Miss Miami but only the bare shell of the orginal motor remains as it was entirely redesigned and rebuilt at the Smith factory.

Miss Detroit II was the 1916 Gold Cup winner and was powered with the same eight-cylinder Sterling motor which drove her to victory at Minneapolis a year ago. In fact, probably the same identical motor has driven many successful racing boats during the past several years as the Smiths are said to have a habit of juggling motors around from hull to hull to suit their own convenience. However, attempts were made by the owner to rebuild and improve upon the motor during the past year but his efforts were evidently unsuccessful for Miss Detroit II broke down in every heat and failed to make a single finish. After each mishap, strenuous efforts were made to get the power plant in shape and several new cylinders, crankshafts, bases, and pistons were used but although the boat was at the starting line each day, yet the changes were of no avail as new and different defects developed each day. After the races the hull was sold to Mr. Mowry of Minneapolis, part owner of Miss Minneapolis, who took the power plant out of Miss Minneapolis and placed it in the hull of Miss Detroit II and gave the name of Miss Minneapolis to the outfit at the Toronto races. This name did not appeal as she was popularly known as Minnie-Detroit at the Canadian races.

Miss Minneapolis, another competitor at Detroit this year, was the 1916 winner at Detroit and the unsuccessful defender at Minneapolis last year. This boat was sadly outclassed this year and a trailer most of the time. She is also said to have been built by popular subscription although Messrs. Mowry and Schefcik are the owners to all intents and purposes. The poor showing of Miss Minneapolis this year, however, did not discourage her owners for hardly had the echo of the gun died away which announced Miss Detroit III the winner, when Mr. Mowry handed in a challenge for 1919 and publically announced that his association would have a new boat ready by that time which would show the world real things in the motor boat speed line.

The fourth competing boat, Whip-po'Will, Jr., owned by Commodore A. L. Judson and entered by the Lake George Regatta Association, was more or less of a disappointment. Great things were expected of her which failed to develop. At times she gave promise of being the greatest and fastest hydroplane ever built but at others, minor and almost inexcusable troubles made her appear a failure. As far as being a big, husky, powerful, and seaworthy hydroplane, there can be no doubt. She was by far the largest boat of the four entered. Whip, as she was nicknamed, was also the smoothest running and most considerate of the comfort of her crew. Her smooth running at speeds in excess of 60 miles an hour, gliding along on the surface of the water without the slightest jumping motion, was the talk of the regatta and made her a picture which satisfied the hearts of the greatest racing enthusiasts.

By winning the mile speed trials at Detroit at a faster speed than has ever before been made in the annual trials, taking the Canadian International Gold Challenge Trophy in a series of three races at Toronto following the Detroit races against the same field that competed at Detroit and then winning the Canadian Gold Trophy in one free for all 25-mile race on Lake Ontario, undoubtedly entitles Whip-po'Will, Jr., to the honor of American Speed Boat Champion of 1918.

Whip was ably handled and raced by a crew consisting of Messrs. Reis and Johnson, the former a chief petty officer in the United States Naval Reserve Force, was given the necessary furlough from active duty by the Navy Department in order that he might pilot Whip-po'Will, Jr., over the 200 odd miles of racing which she did at Detroit and Toronto. No better driver could be found the world over and young Reis showed himself to be a master over every racing situation which developed, comparing most favorably with the experienced company of drivers who were completely against him. In fact, he came through the eight days of racing in far better condition than did such old hands as Gar Wood and Jay and Bernard Smith.

While Whip-po'Will, Jr., did not show the phenomenal speed with which she was credited last November at Lake George, yet one look at the boat's bottom showed that her long voyages overland had completely wrecked her original fine and sweet lines. Her underbody was fairly twisted out of shape due to the fact that the boat is lifted out of water after each race and trial spin and the hull was not strong enough to keep its shape when suspended with the motor's weight of 3,800 pounds pulling downward amidships.

(*Continued on Page* 62)

Sixteenth Race for the American Power Boat Association Gold Challenge Cup—Detroit River, August 30, September 1, 2, 1918. (3 heats; 30 statute miles each.)

Winning Boat, 1918	*Owner*	*Time*	*1918 Winner's Speed S.M.P.H.*	*1917 Winner's Speed S.M.P.H.*	*1916 Winner's Speed S.M.P.H.*
First heat, Miss Detroit III	Detroit Yachtsmen	34:36	52.1	50.7	46.2
Second heat, Miss Detroit III	Detroit Yachtsmen	35:19	51.0	56.3	49.5
Third heat, Whip-po' Will, Jr.	A. L. Judson	34:02	53.0	56.5	50.0
Total race, Miss Detroit III	Detroit Yachtsmen	1:45:50	51.04	54.14	48.6
Fastest Lap (5 statute miles)					
First heat, Miss Detroit III	Detroit Yachtsmen	5:04	59.3	52.74	51.20
Second heat, Miss Detroit II	G. A. Wood	5:22	55.9	59.43	55.35
Third heat, Whip-po'Will, Jr.	A. L. Judson	5:27	55.0	59.43	55.78

Gold Cup Record for 1 complete heat

Made by Miss Detroit II at Minneapolis in 1917. Speed, 56.5 miles per hour.

Gold Cup Record for Complete Race (3 heats)

Made by Miss Detroit II at Minneapolis in 1917. Speed, 54.14 miles per hour.

Fifth Race for A. P. B. A. One-Mile Championship of North America—Detroit River, Sept. 1, 1918, Av'ge of 6 Runs.

1918

Whip-po' Will, Jr.—63.498 miles per hour.

(See page 64 for details of each run)

Previous A. P. B. A. One-Mile Records, Average of Six Runs

Miss Detroit II (1917) 61.724 miles per hour.
Miss Minneapolis (1916) 61.083 miles per hour.
Tech, Jr., (1915) 53.70 miles per hour.
Baby Speed Demon II (1914) 51.726 miles per hour.

Complete Summary of 16th Annual Race for the A. P. B. A. Gold Challenge Trophy—Three Heats of 30 Statute Miles Each—Detroit River, August 30, September 1 and 2, 1918

Boat	*Owner*	*Club*	*Time 1st Race*	*Speed 1st Race*	*Time 2nd Race*	*Speed 2nd Race*	*Time 3rd Race*	*Speed 3rd Race*	*Time Complete Race*	*Total Points*
Miss Detroit III*	Detroit Yachtsmen	Detroit Yacht Club	34:36	52.1	35:19	51.0	35:56	50.1	1:45:51	14
Whip-po'-Will, Jr.	A. L. Judson	Lake George Regatta Assn.	2:17:20	13.1	55:40	32.3	34:02	52.9	3.47:02	12
Miss Minneapolis	G. A. Mowry et al.	Minneapolis Boat Assn.	37:36	47.8	57:20	31.4	36:18	49.6	2:11:14	10
Miss Detroit II	G. A. Wood	Miss Detroit Power Boat Assn.	D N F	....	D N F	....	D N F	....	D N F	0

*Winning Boat.

Deep Sea Motor Ships

(*Continued from page 13*)

fuel oil. This approaches the economy of the true Diesel type of motors, though the Sumner engines are of the semi-Diesel design.

A number of ships built on the coast have, in the last year, been powered with Winton Diesel engines, designed and built by the Winton Gas Engine Co., of Cleveland, an American company organized by Alexander Winton, the well-known automobile manufacturer. Erris is one of these craft, built by the Peninsula Ship Bldg. Co., of Portland. Erris is fitted with twin 300 h.p. Wintons, and the American-built engine has given a very good account of itself in all the ships in which it has been installed.

Probably one of the most complete of the lumber schooners built on the coast is Astoria, built at Astoria, Ore., during 1917. Astoria is 250 feet over all, with a beam of 44 feet and a depth of 21 feet. Her power consists of twin 240 h.p. Skandia engines, which operate on the semi-Diesel principle. Under full load these engines burn 18 barrels of 42 gallons each in a twenty-four hour working day, and she carries fuel sufficient for forty days in her tanks. Astoria has electric cargo winches, and on one occasion she loaded 500,000 feet of lumber in one working day, which is some record, as any longshoreman will tell you.

Not only on sea-going cargo carriers have the heavy-oil engines made progress on the coast but on ferryboats and coastwise ships of smaller size are these new type of motors giving excellent service.

Out of Seattle runs the ferryboat Vashon Island, on a daily shuttle run that is a real test for Diesel motors, and the 250 h.p. Atlas Diesel in her engine-room has given fine satisfaction from the first. This engine was developed by the Atlas Gas Engine Co., of Oakland, Cal., which had long been a successful manufacturer of internal combustion engines for west coast use. Vashon Island is 120 feet long, 36 feet beam, and carries 400 passengers loaded to capacity.

For ferrying passengers across Elliott Bay, at Seattle, the Diesel-powered ferryboat Robert Bridges was built two years ago and while some defects developed in her motive power, the service has been in the main satisfactory.

Of the coastwise freighter type which is bound to come into very general use on the Pacific coast is the vessel being built by the Taylor Engineering Co., Ltd., of Vancouver, B. C., for the British Columbia coasting service. This craft is 125 feet long, 23 feet beam, and will be powered with a 175 h.p. Bolinders heavy-oil engine. She is designed with engine-room and deckhouse aft and with raised forecastle, with one mast forward on which are swung two cargo booms for handling cargo. As coastwise freight business grows there will be more and more of this type of vessel put into service, for the economy of operation will make this boat a real competitor against steam craft of anywhere near similar size.

Wright Kerosene Motor

(Continued from Page 29)

pression as well as long life.

The crankshaft and connecting rods are forged from billets of carbon steel and heat treated. A flange coupling for the reverse gear is forged integral with the crankshaft. There is a babbitt lined bearing between each crankthrow. Both ends of the connecting rods are of the T pattern with split bronze bearings provided with metal shims that allow of an adjustment of .002 inch. The crank-pin bearing is lined with special bearing metal. The bronze bearings are securely held to the rod ends with through bolts.

The camshaft is of steel, in one piece, and is driven by a spur gear on the crankshaft. It is provided with babbitt lined bearings with adjustable caps on each side of every cam, holding it true to line and giving each valve its proper lift. After taking off the plate on the side of the base the entire camshaft assembly (shaft, cams, and gear) can be removed from the engine without disturbing the cam followers or push rods. The hardened steel cam rollers are carried on hardened steel swinging plates to relieve the camshaft and push rod plungers of the side thrust. The push rod plungers rest on top of, and are raised by the swinging plate.

Although the crankshaft and camshaft bearings are lubricated by the splash system, each cylinder is provided with an individual sight feed lubricator that shows at a glance just how much oil is being delivered. Provision is made in the base for keeping the required depth of oil in each crankpit irrespective of the angle of which the engine is installed. The reverse gear operates in a bath of oil and is entirely separated from the crankcase.

Two carbureters are included in the equipment, one for starting on gasoline and warming up the motor and the other for kerosene once the motor is hot. A special generator is provided for gasifying the kerosene by heat treatment and give the same power per gallon gasoline. When operating on kerosene the air is heated by passing over the intake manifold within a buffle. The manifold is not water-jacketed.

To make the kerosene explosion more elastic and permit the use of a compression as high as with gasoline a water vaporizer is used in connection with the kerosene generator.

Ignition is obtained by means of a Bosch dual low tension system with Bosch magnetic make-and-break spark plugs. The magneto is driven by a spiral gear completely housed to insure lubrication. The spark is advanced or retarded at the magneto in the same manner as in a jump spark system.

The clutches for both ahead and astern are of the internal expanding type. The gears are all of the spur pattern and cut from steel blanks, accurately machined and carried by babbitted bearings.

Two bronze fuel pumps are provided, one for gasoline and one for kerosene, so that the fuel tanks may be located below the level of the carbureter. The circulating pump is of the plunger type.

Do you realize the relation of Ignition to your engine's performance?

Ignition provides the vital spark which ignited the gas charge in the cylinder. Without the spark, there would be no power. If the spark is weak, power is weak. When the spark fails, the engine fails.

If you have the right kind of ignition system, your engine will run *when* you want it to and as *long* as you want it to—always with the best power output.

BOSCH

AMERICA'S SUPREME IGNITION SYSTEM

Is a method of ignition on which you can depend today, tomorrow or years from tomorrow. It requires no batteries, no extra complications and no coil. It is an ignition system entirely contained in one rugged unit, with nothing about it to get out of order.

To cure your troublesome, weak powered engine, fit a Bosch Magneto.

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The Weiss Oil Engine

(*Continued from page 28*)

eral points below atmosphere. At this point the supplementary ports open, allowing a charge of pure air to sweep in radially over the conical piston head, displacing the exhaust gases left in the cylinder, while immediately following this as the crank moves through the lower dead center, the crankcase air under approximately five pounds pressure per square inch, also flows in over the conical piston head by way of the annular series of ports formed by the spirally ribbed lower parts of the cylinder liner. In this way three completely separate and distinct charges of air are introduced into the cylinder during the scavenging process, which undoubtedly accounts for the remarkable fuel efficiency of this new Weiss-type engine, and its ability to operate indefinitely without undue heating of piston head.

The oil injection system of this multi-cylinder engine is reduced to the utmost simplicity. In place of direct-driven governor control injection pumps, there is an independent duplex pump to keep the oil under constant high pressure, and a compensating distributor valve, driven from the engine shaft, arranged for timing adjustment for different grades of oil and either direction of rotation. This pump is connected to the air receiver used for starting and reversing the engine. With a normal air pressure of 1,000 pounds in the receiver, the oil pressure is kept at 200 pounds by a reducing valve in the air line. Heavy oils require high pressures for efficient spraying. The governor is designed to act directly on the compensating valve, and is, in fact, carried by the distributor valve and submerged.

There is a spiral gear mounted on the front end of the crankshaft, which drives the oil distributor on one side and the air distributor for starting and reversing on the other. Each cylinder has an air check valve piped to the air distributor and a relief valve open to the atmosphere. These relief valves can be operated either independently or simultaneously by a lever at the front end of the engine, so that the entire control of speed, starting and reversing and pressure relief is brought within easy access of the engineer.

Forced feed lubrication is used for the cylinder, main bearing, crank pin and wrist pin, each pipe terminal fitted with a lubricating sight check.

The Weiss direct reversible marine engine requires no flywheel. The weight per horsepower is reduced to approximately 150 pounds without sacrificing a reliable factor of safety within the limits of working pressure.

In the customary way of putting the wrist pin directly through the piston, which is cast with heavy bosses on each side, the chances of conducting heat to the wrist pin are much greater than in the wrist pin carrier arrangement used in this engine. Particular emphasis is drawn to the illustration showing the conical piston with its even thicknesses of metal, to the connecting rod, to the piston pin carrier and to the piston pin,

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Weiss Oil Engine

(*Continued from Page 48*)

whereby it will be noted that the wrist pin is mounted in a separate carrier which is locked inside of the piston by means of a snap ring, thus dispensing with the ordinary piston construction calling for heavy bosses on the body of the piston, and inasmuch as there is less heat conducted with the Weiss arrangement, the lubrication of the wrist pin and durability of it is materially increased.

In referring again to the piston illustration, there is another feature in the new Weiss piston which is worthy of notice, and that is the absolutely uniform distribution of metal. It is impossible to maintain a true circular piston with the old method of wrist pin supporting bosses, and baffle wall projection, because the heat would immediately throw the piston out of round, and the constant distortion of the piston, due to temperature differences, is apt to loosen the wrist pin in its bearing.

Yard and Shop

(*Continued from page 34*)

A New Kermath Motor

The Kermath Mfg. Co., of Detroit, Mich, have recently brought out a new model four-cylinder motor rated at 8-10 h.p. This motor is similar to their usual type and has a bore of 3 inches with a 4½-inch stroke.

These motors are of modern construction throughout and as regular equipment will be fitted with single unit Allis-Chalmers electric starter, Kingston battery ignition, Kingston carbureter and with reverse gear attached, forming a unit power plant.

For the purpose of gaining lightness in this plant the reverse gear will not be completely enclosed, but will be mounted on an extension. The outfit will be fitted with the Willard storage battery and will be sold as a complete plant and there will be no deviation from the equipment specified. The price will be reasonable, in keeping with their usual policy.

A South Jersey Cruiser

Commodore William F. Metzger's Charlou II is one of the best-known craft along the South Jersey coast. She is a 37-foot by 9-foot 3-inch cruiser with exceptionally fine lines and a good turn of speed. Primarily designed for comfort, there is a large cabin forward and a spacious cockpit aft.

Charlou II has figured prominently in association races for the last several years, although her 45 h.p. Sterling motor is not of a high-speed type and is built to turn but 800 r. p. m. The motor is powerful enough to swing a blade with a stiff pitch and the speed of 17 m. p. h. attained has enabled the Commodore to annex many prizes.

Commodore Metzger says of Charlou II: "She was designed by Bowes & Mower and built by Mathis and is an unusually good boat for outside work."

From the prizes she has taken, we surmise that she runs pretty well inside, too.

Miss Detroit III Wins the Gold Cup

(*Continued from page 42*)

Of all the boats at Detroit, Whip-po'Will, Jr., was the best bet to win and had it not been that fortune was against her she would have brought the bacon home just as she did the only other two speed boat trophies offered this year.

Of the races themselves much has already appeared in print. The first, scheduled for 3 P. M. on Friday, August 30th, was postponed for an hour and a half to allow Whip to rewire her engine after a serious fire on a trial trip, which threatened to wipe out the boat's existence, had burned the insulation off the ignition wires. The course of 30 statute miles was over a 5 mile up and down river elliptical circuit with fairly bad turns, making fast speed extremely doubtful. Miss Detroit III got the jump on the bunch from the start and made the first round of five miles in 5 minutes, 4 seconds, which is at the rate of 59.1 miles an hour and the fastest made by any boat during the three days' racing. Miss Detroit II was running fine in second place, doing her first lap at the rate of 55½ miles an hour. Miss Minneapolis was third and Whip after, being a minute and eight seconds late at the start, was last. The latter's engine was behaving badly the entire distance.

Miss Detroit II withdrew after ten miles with a broken crankshaft and at about eleven miles the motor of Whip-po'Will, Jr., which had been gradually slowing down, went down and out completely. Her magneto had failed and for over half an hour her crew worked strenuously on it before it would respond to the coaxings of the big self-starter with which Whip's power plant is equipped. Even after the repairs had been made, the same part failed again after another half lap and 30 minutes more were required to make repairs.

With no boat to push her Miss Detroit slowed down from the fast pace she had set and just jogged around the course for the next few laps, keeping a safe distance ahead of Miss Minneapolis, which was running a pretty race in second place. Miss Detroit III shot over the finish line in 34 minutes 36 seconds from the starting gun and Miss Minnie came home exactly three minutes later.

A good idea of the consistent running of the two boats may be had from their successive times over the 5-mile triangle (deducting the time lost at the start). Miss Detroit's times were 5:04, 5:25, 5:43, 5:42, 5:58 and 6:20, and those of Miss Minneapolis 5:53, 6:03, 6:06, 6:07, 6:18 and 6:49.

The second day's races were scheduled to start at 3 P. M., but as the owner of Miss Detroit II announced that he could not possibly get the breaks of the day before repaired in time to start at 3 o'clock, the races were put off till 5 P. M. as he thought his ship would be ready by that hour. When 5 o'clock came, the same owner made a request for a further postponement as it was then too rough to risk Miss Detroit III he announced, although we have seen this same driver race in much rougher water in years gone by. The representatives of Miss Detroit II and Miss Minneapolis made the same request for postponement on account of rough water. A hasty meeting of the officials was held and they agreed to postpone the race until the next day at 3 P. M., provided the owner of Whip-po'Will, Jr., would consent. This Mr. Judson cheerfully agreed to in the interest of harmony, although it probably cost him a sure win.

The weather on Sunday was most propitious for motor boat racing and in spite of the gasless Sunday rule, there was a big gallery of spectators on the banks around the course. Postponements were tabooed and the starting gun went promptly at 3 P. M. Miss Detroit II was over the line only 6 seconds later and 8 seconds after her came Whip, traveling at better than a mile-a-minute clip. No. 3 was 23 seconds late and Miss Minneapolis, whose motor had stalled just before the gun, could not get over the starting line for 47 seconds. It was apparent from the start the race of the year was on. Up out of sight the boats went in the same order and when they came in view again Whip had closed up a few seconds on the leader. Down the back stretch they came with both leaders letting out every inch of power they possessed. Whip was in the wash of Miss Detroit II and was throwing spray like an old-time displacement boat. Just before the lower turn was reached the

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Miss Detroit III Wins the Gold Cup

(*Continued from page 62*)

relative position of the two boats changed and Whip went into the lead. It wasn't for long, however, for Miss Detroit II could turn shorter, so into the lead again she went and came past the judges' stand with 2 seconds to spare.

The second lap was a repetition of the first with Whip drawing away from the field on the straightaways and losing all advantage at the turns. Down the back stretch, the boats were neck and neck and here George Reis, the driver of Whip, decided to try the shortest turn attempted with Whip since she overturned in the Mississippi a year ago. Again the turn was too much for Whip's gear, which parted at the important moment and off at a tangent went the racer at 60 miles an hour under no one's control. Luckily, the accident happened at the only point on the whole course which was not lined with sight-seeing craft, for the only damage done was the ramming of a schooner at anchor, after the hydroplane's motor had been stopped and the boat had nearly lost her headway. It took 20 minutes to make repairs and by that time Miss Detroit III had finished but Miss Detroit II and Miss Minneapolis both had trouble also, so after Whip got going again she was able to beat Miss Minneapolis to the finish line by nearly 2 minutes. This heat practically decided the entire race for it gave Miss Detroit III 10 points on the Cup and she need only finish the third heat to be assured that the trophy would remain in the west another year.

Whip-po'Will, Jr., had no trouble in winning the third heat as it was the first race she went through without breaking down. She finished nearly two minutes ahead of Miss Detroit III, which was 23 seconds ahead of Miss Minneapolis. Miss Detroit II again had trouble with her power plant and failed to make a finish for the third time.

A complete summary of the four days' racing will be found on Page 42.

Whip-po'Will, Jr., was the only one of the four boats which completed the runs for the One-Mile Championship Trophy. Miss Detroit III made attempts at two different times to run but withdrew each time on account of rough water. Whip went through her six consecutive runs, three up stream and three down, without trouble. The water was far from smooth and the speed not as great as might have been made under more favorable circumstances.

The times and speeds as computed from the average of the six watches which clocked Whip over each of her six one-mile dashes are as follows:

Run No.	*Average Time, Seconds* (6 watches)	*Speed S.M. P. H.*
1. Down stream	56.67	63.526
2. Up stream	57.00	63.158
3. Down stream	56.40	63.830
4. Up stream	57.27	62.860
5. Down stream	55.37	65.017
6. Up stream	59.37	60.637
Average speed, (Mean of Means)		63.498
Fastest speed (Down stream)		65.017

Timers: Lower end of course, Messrs. Sampson, Crouch and Still. Upper end of course, Messrs. Clark, Power and Chapman.

An express cruiser race in 3 heats for a trophy offered by the *Detroit Daily News* was won by Aeolus owned by G. H. Sherman.

The entire arrangements and details for the Gold Cup races, one-mile trials and the express cruiser race were managed by members of the Detroit Yacht Club under the leadership of Frederick R. Still. They were as nearly perfect in every detail as it is possible to make them. Assisting the Committees from the Detroit Yacht Club, several out-of-town motor boat racing enthusiasts rendered valuable aid. Henry Sampson, official timer of the American Power Boat Association, was always on the job and only missed one boat as it passed. (His excuse for the one error was justified although Detroit is dry.) Sheldon Clark, the racing man from Chicago, who has done more for racing on Lake Michigan than all others combined, assisted in the timing as did also G. F. Crouch of New York and R. E. Power of Cleveland, two well-known and experienced racing men.